

3235 Fernbrook Lane N • Plymouth, MN 55447
Tel: 763.553.1144 • Fax: 763.553.9326
Email: judie@jass.biz • Website: www.shinglecreek.org

March 3, 2022

Commissioners
Shingle Creek and West Mississippi
Watershed Management Commissions
Hennepin County, Minnesota

The agenda and meeting packet are available to all interested parties on the Commission's web site:
<http://www.shinglecreek.org/minutes--meeting-packets.html>

Dear Commissioners:

A joint regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be held **Thursday, March 10, 2022, at 12:45 p.m.** This will be a virtual meeting.

The Technical Advisory Committee (TAC) will meet prior to the regular meeting at 10:30 a.m.

To join the meeting, click <https://zoom.us/j/834887565> or go to www.zoom.us and click **Join A Meeting**. The meeting ID is **834-887-565**. The password is **water**. If your computer is not equipped with audio capability, you need to dial into one of these numbers:

+1 929 205 6099 US (New York) +1 312 626 6799 US (Chicago) +1 669 900 6833 US (San Jose)
+1 346 248 7799 US (Houston) +1 253 215 8782 US +1 301 715 8592 US

Meeting ID: 990 970 201. Passcode: 579973

Meetings remain open to the public via the instructions above.

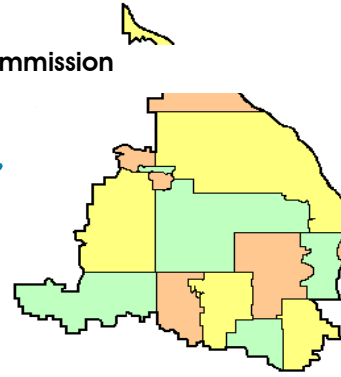
Please email me at judie@jass.biz to confirm whether you or your Alternate will be attending the regular meeting. Thank you.

Regards,

Judie A. Anderson
Administrator

cc: Alternate Commissioners Member Cites Wenck/Stantec Troy Gilchrist
TAC Members Hennepin County Reviewing Agencies

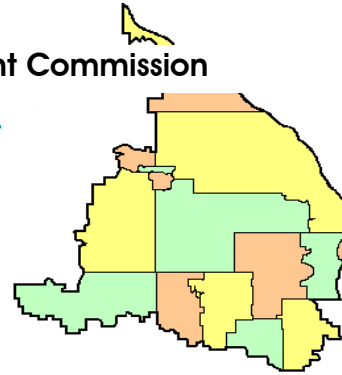
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AGENDA – March 10, 2022

A combined regular meeting of the Shingle Creek (SC) and West Mississippi (WM) Watershed Management Commissions will be convened Thursday, March 10, 2022, at 12:45 p.m. Agenda items are available at <http://www.shinglecreek.org/minutes--meeting-packets.html>. *Black typeface denotes SCWM items, blue denotes SC items, green denotes WM items.*

- | | | | |
|---|------|-----|---|
| | SCWM | 1. | Call to order. |
| | SCWM | a. | Roll call. |
| ✓ | SCWM | b. | Approve agenda.* |
| ✓ | SCWM | c. | Approve minutes of last meeting.* |
| | | 2. | Reports. |
| ✓ | SC | a. | Treasurer’s Report and Claims** - voice vote. |
| ✓ | WM | b. | Treasurer’s Report and Claims** - voice vote. |
| | SCWM | 3. | Open forum. |
| | | 6. | Project reviews. |
| ✓ | SC | a. | SC2022-03 Arbor Lakes Phase II, Building B, Maple Grove.* |
| | SCWM | 7. | Fourth Generation Watershed Management Plan. |
| | | a. | Updates.* |
| | | 1) | Equity Workshop. |
| | | b. | Monitoring Program Framework – presentation. |
| | | c. | Website Interactive Map – presentation. |
| | | 8. | Water quality. |
| ✓ | SC | a. | 2022 Monitoring Plan.* |
| ✓ | SC | 1) | Equipment Replacement – Bass Creek.* |
| ✓ | WM | b. | 2022 Monitoring Plan.* |
| ✓ | WM | 1) | Professional Services Agreement.* |
| | | 9. | Grant opportunities. |
| ✓ | SC | a. | Crystal Lake Management Plan – Carp Removal.* |
| ✓ | SC | 1) | Change Order.* |
| | | 10. | Education and public outreach. |
| | SCWM | a. | WMWA update.** |
| | SCWM | b. | Next WMWA meeting – via zoom. 8:30 a.m., Tuesday, April 12, 2022. |
| | | 11. | Communications. |
| | SCWM | a. | Staff Report – verbal report. |
| | SCWM | b. | Communications Log.* |
| | | 12. | Other business. |
| | | 13. | Adjournment. |



MINUTES
February 10, 2022

(Action by the SCWMC appears in blue, by the WMWMC in green and shared information in black.
 *indicates items included in the meeting packet.)

I. A joint virtual meeting of the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission was called to order by Shingle Creek Chairman Andy Polzin at 12:50 p.m. on Thursday, February 10, 2022.

Present for Shingle Creek were: David Vlasin, Brooklyn Center; Alex Prasch, Brooklyn Park; Burt Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Ray Schoch, Minneapolis; Robert Grant, New Hope; John Roach, Osseo; Andy Polzin, Plymouth; Wayne Sicora, Robbinsdale; Ed Matthiesen, Diane Spector, Katie Kemmitt, and Todd Shoemaker, Stantec; Troy Gilchrist, Kennedy & Graven; and Amy Juntunen and Judie Anderson, JASS.

Present for West Mississippi were: David Vlasin, Brooklyn Center; Alex Prasch, Brooklyn Park; Gerry Butcher, Champlin; Karen Jaeger, Maple Grove; John Roach, Osseo; Ed Matthiesen and Diane Spector, Stantec; Troy Gilchrist, Kennedy & Graven; and Amy Juntunen and Judie Anderson, JASS.

Also present were: Andrew Hogg, Brooklyn Center; Mitchell Robinson, Brooklyn Park; Heather Nelson, Champlin; Mark Ray, Crystal; Derek Ashe, Maple Grove; Liz Stout and Katie Kowalczyk, Minneapolis; Nick Macklem, New Hope; Leah Gifford, Amy Riegel and Ben Scharenbroich, Plymouth; Richard McCoy, Robbinsdale; and Laura Scholl, Jennifer Moeller, Lilah White, and Erika Schlaeger dos Santos, Metro Blooms, for the Brooks Gardens presentation.

II. Agendas and Minutes.

Motion by Jaeger, second by Schoch to approve the **Shingle Creek agenda*** as revised. *Motion carried unanimously.*

Motion by Butcher, second by Prasch to approve the **West Mississippi agenda** as revised.* *Motion carried unanimously.*

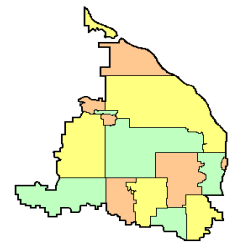
Motion Schoch, second by Grant to approve the **minutes of the January 13, 2022, regular meeting.*** *Motion carried unanimously.*

Motion by Roach, second by Jaeger to approve the **minutes of the January 13, 2022, regular meeting.*** *Motion carried unanimously.*

III. Finances and Reports.

A. Motion by Jaeger, second by Schoch to approve the Shingle Creek **February Treasurer's Report* and claims** totaling \$13,897.48. Voting aye: Vlasin, Prasch, Orred, Jaeger, Schoch, Grant, Roach, Polzin, and Sicora; voting nay – none.

B. Motion by Butcher, second by Jaeger to approve the **West Mississippi February Treasurer's Report* and claims** totaling \$5,525.68. Voting aye: Vlasin, Prasch, Butcher, Jaeger, and Roach; voting nay – none.



IV. Open Forum.

Scholl, Metro Blooms, Project Manager for the **Brooks Gardens Apartments and Townhomes Community** in Brooklyn Park, and her team presented a visual tour of the community. As a result of their work with the residents, together they have created 4,282 square feet of new habitat and annually capture 1.17 million gallons of runoff, 2,000 lbs. of solids and 4.5 lbs. of total phosphorus. Planting will continue in 2022. The Shingle Creek Commission provided \$30,000 cost-share funding for the \$86,107 project.

V. Election of Officers and Annual Appointments.

A. Shingle Creek.

1. Hearing no further nominations, motion by Shoch, second by Jaeger to elect the following as officers for 2022: Andy Polzin, Plymouth, Chair; Wayne Sicora, Robbinsdale, Vice Chair; Karen Jaeger, Maple Grove, Secretary; and Burt Orred, Jr., Crystal, Treasurer. *Motion carried unanimously.*

2. Motion by Jaeger, second by Schoch to make the following appointments for 2022: Official Newspaper – *Osseo-Maple Grove Press*; Deputy Treasurer – Judie Anderson; Official Depositories – U.S. Bank, 4M Fund; and Auditor – Johnson & Company, Ltd. *Motion carried unanimously.*

B. West Mississippi.

1. Hearing no further nominations, motion by Butcher, second by Roach to elect the following as officers for 2022: Gerry Butcher, Champlin, Chair; David Vlasin, Brooklyn Park, Vice Chair; and Karen Jaeger, Maple Grove, Secretary/Treasurer. *Motion carried unanimously.*

2. Motion by Butcher, second by Jaeger to make the following appointments for 2022: Official Newspaper – *Osseo-Maple Grove Press*; Deputy Treasurer – Judie Anderson; Official Depositories – U.S. Bank, 4M Fund; and Auditor – Johnson & Company, Ltd. *Motion carried unanimously.*

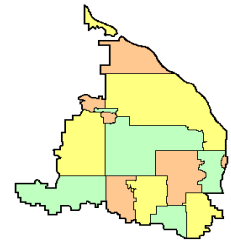
VI. Project Review.

WM2022-01 Champlin Park High School, Brooklyn Park.* Construction of new artificial turf athletic field, new baseball field, trails and associated amenities on a site located at 6025 109th Avenue North. The project proposes to disturb approximately 6.2 acres of the 75-acre parcel. Following development, the site will be approximately 36 percent impervious, an increase of 0.19 acres. A complete Project Review application was received on January 28, 2022.

To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 80-85% TSS removal and 50-60% TP removal. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the site is proposed to be routed to pervious areas and a new infiltration basin. The applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff be limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the school campus is managed within an existing pond northeast of the parcel. For this project, rate control is achieved using an existing low area within the athletic fields and a new infiltration basin adjacent to the new artificial turf field. The applicant meets the Commission's rate control requirements.



Commission rules require the site to infiltrate 1.0” of runoff from new impervious area within 48 hours. The new and reconstructed impervious area on this site is 0.48 acres, requiring that 1,740 cubic feet be infiltrated within 48 hours. The applicant proposes to use impervious disconnection and an infiltration basin to provide 2,420 cubic feet of abstraction. Both have the capacity to infiltrate the required volume within 48 hours, which meets Commission requirements.

The NWI does not identify any wetlands on site. There are no Public Waters on this site. There is no floodplain on this site. Freeboard requirements are satisfied as there are no buildings adjacent to the proposed infiltration basin.

An erosion control plan was submitted with the project review, and includes rock construction entrance(s), perimeter silt fence, and slope checks. The proposed revegetation plan does not specify native seed within the infiltration basin. The erosion control plan does not meet Commission requirements.

A public hearing on the project is not required by the City of Brooklyn Park Planning Commission because there is no change in use within the project area.

Motion by Jaeger, second by Prasch to advise the City of Brooklyn Park that approval of project WM2022-01 is granted with the following condition:

Specify a native seed mixture for permanent stabilization of the infiltration basin. For the basin bottom, consider potted plants or plugs because seed can be eroded or mobilized by runoff before germination.

Motion carried unanimously.

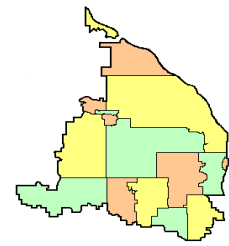
VII. Fourth Generation Watershed Management Plan.*

Kemmitt provided an overview of the progress on the Plan update.

A. Maintenance Funding Guidelines.* Staff drafted a Maintenance and Resiliency Funding policy for TAC and Commission review. The policy addresses the types of work that may be eligible for funding, including work resulting from capital projects that doesn't fall neatly into either operations or brick and mortar projects. At their January meeting, members of the Technical Advisory Committee spent considerable time discussing the draft policy and requested Staff to return in February with suggested revisions for further discussion.

Under the February draft policy, projects that will be considered for Commission funding under the Maintenance Funding policy fall into two categories as follows:

- 1.** Actions to maintain water quality benefits following Commission-led projects such as but not limited to:
 - a.** Annual rough fish maintenance management
 - b.** Rough fish barrier cleaning, repair, and maintenance
 - c.** Whole-lake invasive aquatic vegetation management treatments performed for water quality, excluding those for recreation, aesthetics, or navigation and with DNR concurrence
 - d.** Alum treatment touch-up
 - e.** In-lake vegetation transplanting efforts
 - f.** Research BMP maintenance (e.g., biochar and iron-enhanced sand filters constructed under Watershed projects)



2. Other actions that do not fall within the above category, evaluated on a case-by-case basis by the TAC and recommended to the Commission.

Actions that will not be considered include any city actions for meeting National Pollutant Discharge Elimination System (NPDES) permit requirements; other activities that are clearly city responsibilities including pond dredging, street sweeping, and removing terrestrial invasive vegetation; and project-related operations and maintenance to which the city previously agreed such as debris removal and bank stabilizations related to stream restoration projects.

All candidate actions will be reviewed by the TAC and recommended to the Commission for approval. Unallocated funds will carry over from year to year and be maintained in a designated fund account.

Motion by Schoch, second by Grant to approve the revised policy. *Motion carried unanimously.*

B. Spector recapped the discussion that occurred at the Technical Advisory Committee meeting that preceded this meeting regarding revisions to the Commissions' **Rules and Standards**. TAC members are reviewing a marked-up version of the 2013 Rules. The updated rules will align with the new MS4 general permit and the latest guidance in the Minnesota Stormwater Manual. They will also add clarity to how the Commissions will review certain project elements to align with City and surrounding Watershed requirements.

The Rules will be revised to replace the current Water Quality requirement of providing 60% TP and 85% TSS removal or infiltrating 1.3 inches, to the new standard of 1.1 inches of volume management through infiltration or abstraction, or a combination of abstraction and filtration.

The revised rules will also adopt the new requirements for linear projects, potentially establishing an upper dollar limit per pound of TP removal to define "cost effective."

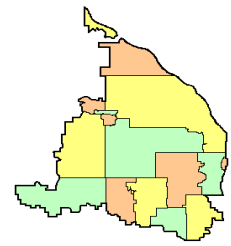
Other updates are mainly housekeeping revisions.

C. Monitoring program framework.* Members of the TAC and Commissions are being asked by Staff to consider the following regarding changes to the Monitoring Program for the 4th Generation Plan:

1. How can monitoring efforts be best coordinated between cities and the WMO?
2. Consider changes to the West Mississippi outfall monitoring schedule and frequency to best address current data needs.
3. Equipment replacement and technology upgrade costs. The Shingle Creek Commission has invested significant money in equipment, which requires occasional replacement and upgrades.
4. Hennepin County has reduced their biological monitoring efforts in recent years due to COVID-19 restrictions. Hennepin County programs may not be a consistent source of data moving forward.

D. Kemmitt displayed the recent updates to the **online story map** that will accompany the Fourth Generation Plan. Work on the story map will continue, with updates to layers and data shown. The story map is intended to be used as a visual, data-driven tool; the Commissions' website will continue to be the main source for watershed information. The story map will link back to the website where possible for in-depth information on projects, Commission processes, and more.

E. Public Input and Review. Member cities are being contacted to determine which of their active commissions would best serve as a Citizen Advisory Committee to provide input and review of the draft plan as it moves through the development process and to establish a schedule. The request is for two meetings, with a homework assignment prior to the first meeting.



VIII. Water Quality.

Creekview Park Area, Minneapolis.* This project is a collaboration with the City of Minneapolis and the Minneapolis Park Board to repurpose the Humboldt pond filter by pumping water from the creek into the pond and discharging the water through the filter. This project aligns with Minneapolis' goal of reducing the bacteria level in the stream down to a safe level. Construction is likely a couple of years out.

Motion by Schoch, second by Orred to approve \$5,000 from the Closed Project Account to help fund this project. *Motion carried unanimously.*

IX. Grant Opportunities.

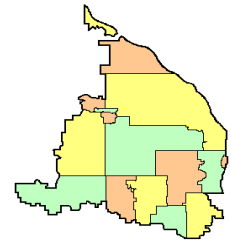
A. Palmer Creek Estates.* Included in the meeting packet is a copy of grant agreement C22-0255* in the amount of \$384,000 between the Board of Water and Soil Resources (BWSR) and the Commission for the recently awarded Palmer Creek Estates Stream Stabilization project in the city of Plymouth. This project is a stream restoration of a portion of what used to be the Bass Creek channel upstream of Bass Lake, and installation of underground treatment devices to treat stormwater before being discharged into the channel and into the lake. The Administrator executed the draft agreement and sent it back to BWSR to work its way through its approval process. The requested action is ratification of that administrative signature. It should be noted that this grant agreement is similar to many of the BWSR grant agreements the Commission has executed in the past.

At the time the Commissioners ordered the project last September 2021, they authorized developing and executing a cooperative agreement with the City of Plymouth to construct the project. Staff held off on developing that agreement because the grant application was still pending. BWSR subsequently awarded the grant, and that cooperative agreement should now be a cooperative and subgrant agreement. In a cooperative and subgrant agreement, the City agrees to take on responsibility for the project and Commission agrees to reimburse the City for costs from the grant as well as other sources (such as levy) as necessary. The City agrees to be bound by the requirements of the BWSR grant agreement. These are standard agreements drafted by the attorney that we routinely use for CIP projects.

Motion by Schoch, second by Grant to ratify the administrative execution of the grant agreement. *Motion carried unanimously.*

B. Bass Lake Vegetation Improvements. At the January 2022 Commission meeting Staff was directed to move forward with a DNR Conservation Partners Legacy Grant application* to fund aquatic vegetation transplants to Bass Lake. Conservation Partners Legacy Grants fund conservation projects that restore, enhance, or protect forests, wetlands, prairies, and habitat for fish, game, and wildlife in Minnesota. Staff have begun writing the application with a focus on the habitat improvements that will be made in the lake. Staff is also in the process of obtaining Letters of Support from the City of Plymouth and the Bass Lake Improvement Association to accompany the grant application. A 10% match will be required and will be provided by a combination of Bass Lake Improvement Association in-kind labor and cash match from the reserve funds left over from the Bass and Pomerleau Lakes alum treatment project. The grant request will be \$22,890; a minimum of \$2,489 will be required for match. At their earlier meeting today, the TAC recommended that the Commission approve this application.

Motion by Schoch, second by Jaeger directing Staff to complete and submit the application. *Motion carried unanimously.*



C. 2022-23 WBIF Grants.* The Board of Water and Soil Resources (BWSR) biennially appropriates funding for a program called Watershed-Based Implementation Funding (WBIF). The WBIF funding is allocated to targeted watersheds to be distributed according to guidelines agreed upon by the eligible entities in the allocation area (“the Partnership”). The BWSR Board approved allocations for fiscal year 2022, including \$95,501 to the Shingle Creek allocation area and \$75,000 to the West Mississippi allocation area, which will become available July 1, 2022. A minimum 10% match is required.

The BWSR Funding Policy for the program specifies that each Partnership will include one decision-making representative from each watershed district and/or watershed management organization, soil and water conservation district, county with a current groundwater plan, and up to two decision-making representatives from municipalities within the allocation area. For these two allocation areas, that would include the respective commission, Hennepin County in its capacity as the county SWCD, and up to two cities. Other parties may participate in discussions regarding the use of the funding, but only the decision-making representatives may make the final recommendation to BWSR. The city and watershed representatives may be TAC members or Commissioners.

At today’s Technical Advisory Committee meeting, Amy Riegel from Plymouth and Mitchell Robinson from Brooklyn Park volunteered to represent the cities. Kris Guentzel will represent Hennepin County.

Schoch and Jaeger agreed to represent the Commissions.

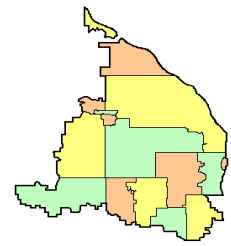
The first official convene meeting will be held at the end of the March 10, 2022, TAC meeting, just prior to the regular March meetings of the Commissions. At that meeting the group will begin discussing options for the use of the funds.

Staff recommends that the TAC and Commissioners start thinking about their priorities and objectives for the funding. Activities eligible for funding span a very wide range of options, but all must be focused on prioritized and targeted cost-effective actions with *measurable water quality results*. Funding is not limited to capital projects; anything in the Third Generation Plan’s Implementation Plan may be eligible as long as its end goal is the protection and improvement of water quality. The Implementation Plan included several broad areas, including:

1. Keeping the Rules and Standards up to date
2. Maintaining a robust monitoring program
3. Implementing an education and outreach program
4. Implementing TMDL management actions
5. Completing subwatershed assessments and follow-up implementation cost share
6. Matching grants
7. Maintaining an ongoing and periodically updated capital improvement program (CIP)

The Partnerships may choose to award the funds to one high-priority project or make numerous awards for varying objectives. Tables 1 and 2 in Staff’s February 3, 2022, memo* show the current CIPs for each Commission. You may add one or more projects to the CIP by Minor Plan Amendment for eligibility for the WBIF funding if that is approved prior to submitting a work plan.

Along with designating the required representatives, the secondary purpose of this discussion is to provide some broad guidance and direction to the designees to consider during the Convene meeting. For example, the Commissions may want to make it known to the Partnership their funding preference.



At the March 10 Convene meeting the Partnerships will complete some procedural details and then discuss the desired objectives and outcomes from the use of the funding before diving into determining how fundable activities will be solicited and selected. Recommended activities approved by BWSR may then be detailed in a work plan starting approximately June 2022. Funding would be available July 1, 2022, following submittal and approval of the work plan. Recommended Convene meeting objectives include:

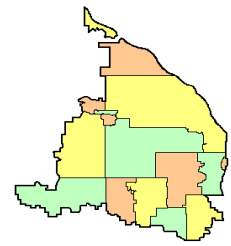
1. Choose a decision-making process.
2. Decide how to select activities for funding. Note that partnerships may also want to choose funding targets for various categories (e.g., projects, studies, education).
3. Partnerships may select activities by:
 - a. Developing a list of potential activities from eligible plans,
 - b. Dividing funding among eligible entities in an equitable manner,
 - c. Selecting a few priority waterbodies (lake, streams) and/or groundwater areas to prioritize activities,
 - d. Using agreed upon criteria to select activities, or
 - e. Using a process approved by the BWSR Central Region Manager.
4. Select the highest priority, targeted, measurable, and eligible activities to be submitted to BWSR as a budget request.
5. Confirm which entity will serve as grantee and/or fiscal agent for each selected activity and decide on the source of the 10% required match.

X. Education and Public Outreach.

- A. The West Metro Water Alliance (WMWA) met on February 8, 2022.
- B. **Blue Thumb/Metro Blooms.** WMWA will be forwarding to the cities in the four member WMOs (Bassett Creek, Elm Creek, Shingle Creek, and West Mississippi) information about 2022 potential resilient yards workshops that Metro Blooms now offers virtually. City sponsorship may fulfill an MS4's obligation to provide workshops or other learning opportunities to their residents.
- C. **Flyer Update.** The pet waste and water softener flyers have been completed and work is nearly done on the proper ice melt use flyer. These will be available to all the MS4s in the WMOs to help meet their NPDES permit obligations.
- D. **Watershed PREP.** The new educator, Jessica Sahu Teli, is working with the retiring educator to solicit classroom opportunities for this spring.
- E. The **next meeting** will be held via Zoom at 8:30 a.m., March 8, 2022.

XI. January Staff Report.*

- A. **Grant Closeouts.** Staff completed the final reporting for two BWSR grants that expired December 31, 2021: the Bass and Pomerleau Alum Treatments and the 2019 Watershed Based Implementation Funding (WBIF). The WBIF funding helped to cost share in four projects: Acquisitions and installation of a brining system at the Brooklyn Center Central Garage; an underground treatment system for an adjacent catchment area constructed opportunistically with the reconstruction of New Hope's Civic Center Park; the initial Meadow Lake drawdown; and Brooklyn Park's River Park Stormwater Improvements.
- B. **Grant Follow-up.** Periodically BWSR prepares and features project writeups highlighting successful grant-funded projects. Staff, Andy Polzin, and Mitch Robinson were all interviewed recently for a writeup on the original Connections project, which also notes that it is one of a series of projects that



ultimately is creating a 2.5 mile corridor of restored urban stream. When the final version is published, we will forward it on to you as well as post a link on the website and social media.

C. Future Projects.

1. Brooklyn Park. On January 12 staff met with Mitch Robinson and Jesse Struve from the City of Brooklyn Park regarding a potential future stream restoration project in Brookdale Park, downstream from the Connections I and Connections II projects. Because this potential project is mostly though a wide area of parkland, there is an opportunity to restore a more natural, meandering channel. City staff were interested in exploring this project, which would likely be 2-3 years out.

2. Minneapolis. On January 13 Staff met with Rachel Crabb and Adam Arvidson of the Minneapolis Park and Recreation Board to talk about potential future joint projects. The Park Board anticipates making a number of improvements to the Creekview Park/Shingle Creek Park area between the Queen Avenue bridge and 49th Avenue over the next 2-4 years. While most of the improvements are within the upland park area, there is a desire to incorporate some natural area improvements as well as some in-stream work. The MPRB is interested in exploring partnership options further. Because the MPRB is not a party to the Joint Powers Agreement, any improvements will likely have to be done as part of a three-party cooperative agreement between the Commission, MPRB, and City of Minneapolis. Staff are also in talks with the MPRB and the City about the possibility of repurposing the iron-enhanced sand filter on the Humboldt Pond to divert streamflow into the pond for treatment and then release the treated water back into the creek. (See VIII., above.)

D. Project Updates.

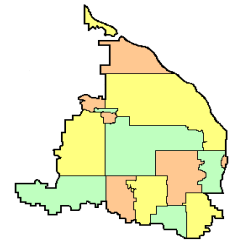
1. Crystal Lake Management Plan. Staff has met with WSB and requested a proposal for a second year of carp removal. Staff are also putting together the paperwork to reallocate grant funds from the alum treatment activity to the carp management activity.

2. Bass and Pomerleau Lakes Management Plan. (Also see item IX.B. regarding the native vegetation restoration grant project.) Staff has been in touch with MPCA staff regarding the process for removing the lakes from the Impaired Waters List. Staff are working with them on gathering the required data and narratives. The next assessment process will initiate in fall 2022 so this is perfect timing. The assessment team will look at not only average water quality over the past ten years, but also the corrective actions that have taken place in the lake and watershed. This will help them decide if the improved water quality is likely to be sustained into the future, or whether it is simply a short-term response.

3. Meadow Lake Management Plan. Project is looking good with good frost depth. No additional work is anticipated until spring.

4. Connections II and Bass Creek Restoration Projects. Construction is underway, starting with tree removals and creation of stabilized access points. Completion is expected by spring 2022. Staff will have some slides of work currently under way.

5. SRP Extension Project. This project is temporarily on hold as the City of Crystal continues to work with MAC to obtain permission to construct the project on MAC property. Once that is secured it is expected that work will proceed starting approximately in March depending on the weather and be complete by mid-summer 2022.



XII. Communications.

A. January Communications Log.* No items required action.

B. The Commissions have been copied on a letter from the Bassett Creek Watershed Management Commission to Mike Trojan at the Minnesota Pollution Control agency thanking him for his and the MPCA's work to develop credits and guidance for **Manufactured Treatment Devices** (MTDs) in the *Minnesota Stormwater Manual*. The letter states that this new guidance "will streamline development reviews, provide consistency across jurisdictions, and provide succinct guidance to project proposers."

XIII. Other Business.

A. Annual appointments of commissioners are still due from the cities of Minneapolis, and New Hope.

B. Spector and Laura Jester, Administrator for the Bassett Creek WMO, are collaborating on an **Equity in Watershed Management Workshop**, tentatively scheduled for April 25. Second District County Commissioner Irene Fernando is lined up to facilitate this event. Discussion will be centered around the history of environmental justice in our area, where Bassett Creek and Shingle Creek WMOs have concentrated their resources in the past, what is the intersection between watershed work and environmental justice, how other WMOs and member cities are addressing the issue, and what role they see for the watersheds.

XIV. Adjournment. There being no further business before the Commissions, the joint meeting was adjourned at 3:03 p.m.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Judie A. Anderson". The signature is written in a cursive style and is positioned above the typed name.

Judie A. Anderson,
Recording Secretary
JAA:tim

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SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION**PROJECT REVIEW SC2022-03: ARBOR LAKES BUSINESS PARK PHASE II, BUILDING B**

Company: Endeavor Development
Address: 200 Southdale Center
Minneapolis, MN 55345

Engineer: Jared Jones, PE
Company: Kimley-Horn
Address: 767 Eustis Street, Suite 100
St. Paul, MN 55114

Phone: 612-389-1819
Email: jared.jones@kimley-horn.com

Purpose: Construction of a new building and associated parking and loading docks on 5.1 acres.

Location: 10900 Fountains Drive, Maple Grove, MN 55311 (Figure 1).

Exhibits:

1. Project review application and project review fee of \$2,500, dated 2/22/22, received 2/25/22.
2. Site Development plans (22 sheets) including grading plan (Figure 2), dated 2/18/22, received 2/21/22.

Findings:

1. The proposed project is the construction of a new building and associated parking and loading docks. The site is 11.2 acres. Following development, the site will be approximately 87 percent impervious with 9.7 acres of impervious surface, an increase of 9.7 acres.
2. The complete project application was received on February 25, 2022. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the April 14, 2022 meeting. Sixty calendar-days expires on April 26, 2022.
3. The project location is located within the Maple Grove Gravel Mining Area (GMA, Figure 3). In 2010, the Commission reviewed and approved a plan by the City of Maple Grove to obtain infiltration credits for this new development by constructing biofiltration basins adjacent to four existing regional stormwater ponds. Stormwater from areas that developed prior to the infiltration rule is directed to these basins. The Commission agreed that these new infiltration basins are adequate to provide regional infiltration for the 553 acres of undeveloped area (SC2010-04). The subject project is located within that area and therefore meets Commission rate, water quality, and volume control treatment requirements. This has been verified with City staff.
4. The erosion control plan includes rock construction entrances, perimeter silt fence/biolog, and inlet protection. The erosion control plan does not meet Commission requirements.
5. The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.
6. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.

SC2022-03:

7. There is no FEMA-regulated floodplain on this site. The low floor elevations of the buildings are at least two feet higher than downstream high water elevations according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.
8. The site is not located in a Drinking Water Management Area (DWSMA). The applicant meets Commission drinking water protection requirements.
9. A public hearing on the project is not required per the City's Planning Manager. There was a public hearing with the concept plan submitted to the city in 2021.
10. A draft Operations & Maintenance (O&M) agreement between the applicant and the City is not applicable.
11. A Project Review Fee of \$2,500 has been received.

Recommendation: Recommend approval subject to the following condition:

1. Clarify the final revegetation plan for pervious areas. It is not clear from the plans if sod or seed and mulch/blanket will be used to stabilize pervious areas. Further, provide sufficient stabilization for the steep slopes at the west and southwest portions of the site.

Stantec
Engineers for the Commission

Todd Shoemaker, P.E.

Date

Figure 1. Site location.



Figure 2. Site grading plan.

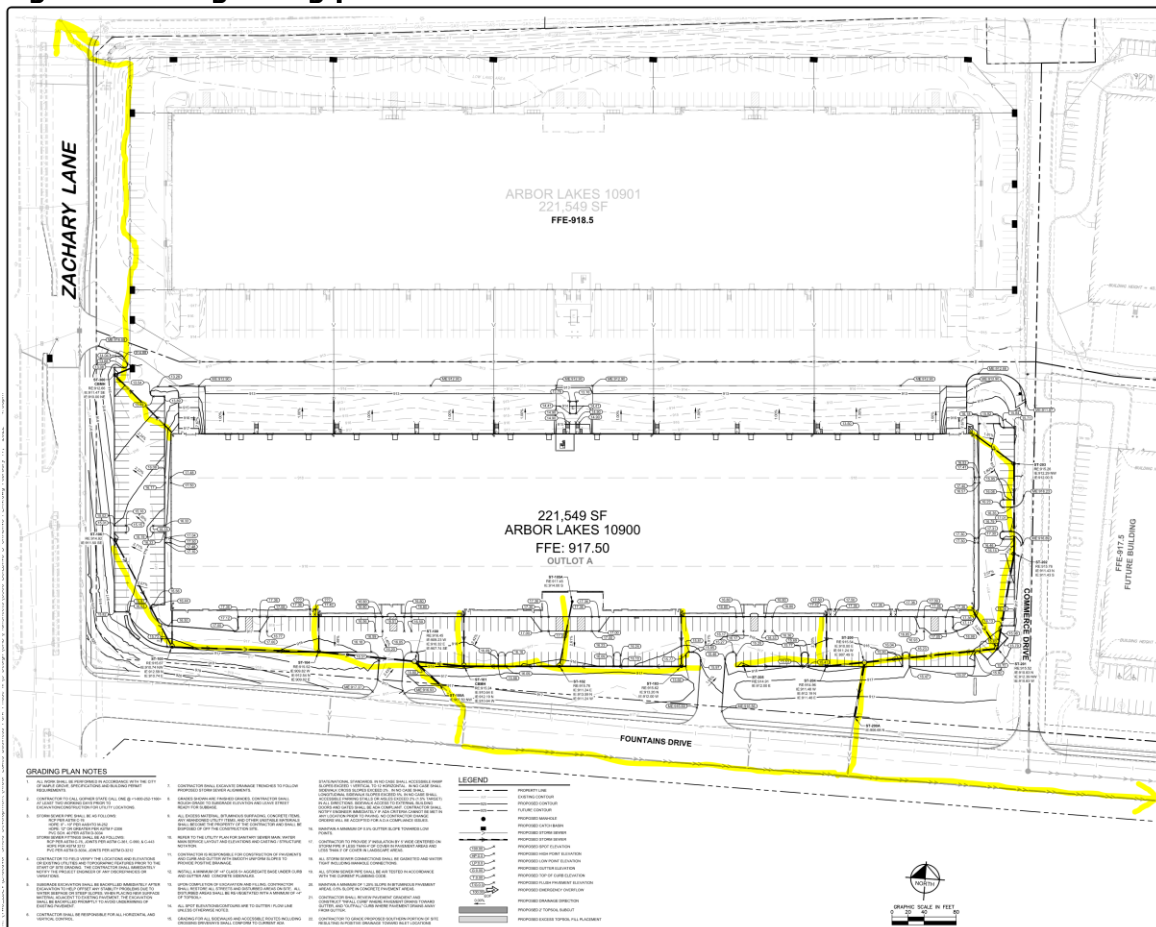
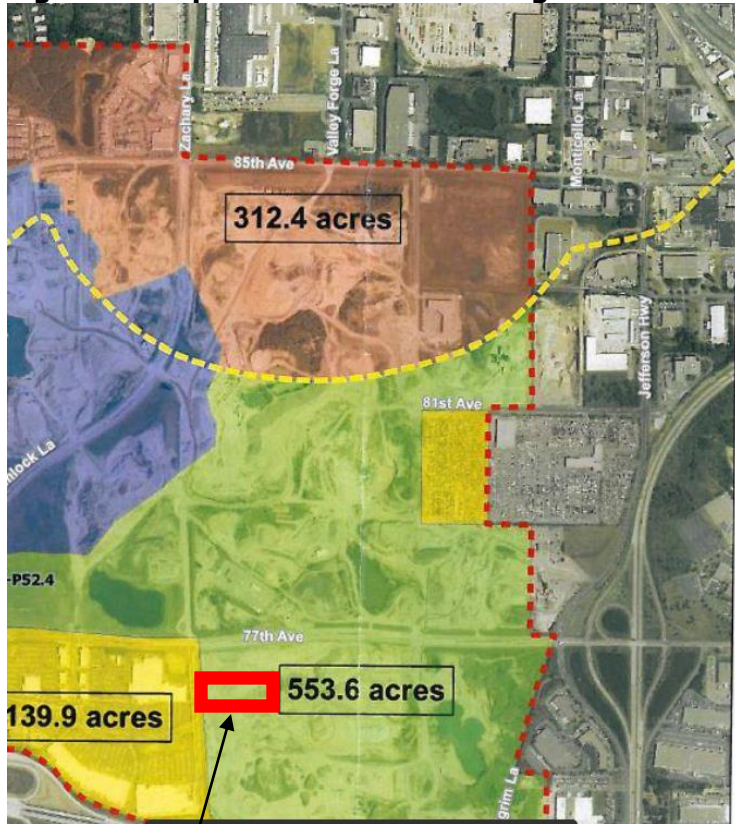


Figure 3. Maple Grove Gravel Mining Area



Project Location



Infiltration Credit Map

March 2010

- 5-Year Time-of-Travel Wellhead Protection Area
- Proposed Storm Water Diversion and Treatment System (Infiltration Outlet)
- Study Area Boundary
- 5-yr TOT Wellhead Protection Area
- Developed Area Outside Infiltration Credit Area
- Infiltration Credit Area
- Undeveloped GMA

To: Shingle Creek/West Mississippi WMO Commissioners

From: Diane Spector
Katie Kemmitt
Erik Megow, P.E.

Date: March 4, 2022

Subject: Fourth Generation Plan Update

Recommended Action	Discuss the upcoming Equity workshop. Discuss the rules revision. Provide input into monitoring program review.
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We have four items for discussion at our March meeting:

1. Equity workshop. Bassett Creek administrator Laura Jester and Diane have initially met with representatives from Metro Blooms, who are helping to coordinate an Equity Workshop for the three watersheds as they prepare (or ramp up to) their fourth-generation plans. County Commissioner Irene Fernando has agreed to chair the workshop, which will be held in person from **6 – 8 pm on April 25**, tentatively at the Crystal Community Center. Commissioners and alternates, TAC members and other City staff will be invited, so please hold the date. Some of the topics we have been considering for the workshop include:
 - a. History of environmental justice in our area.
 - b. How and where watershed resources and funding have been concentrated in the past.
 - c. How other watershed organizations are addressing the issue.
 - d. How are cities addressing the issue and/or what role do they see for watersheds?
 - e. Challenges and opportunities for providing equitable environmental outcomes in underserved communities.

At this point the agenda, topics, and speakers are still fluid, although we have a few ideas of who might be invited to speak to these topics. We'd like to get your feedback on what needs you see in this area and what you'd like to see discussed.

2. Rules revisions. The TAC continues to discuss proposed language bringing the rules into conformance with the latest NPDES permit. A marked-up draft is circulating with the intent to begin the formal review and adoption process in April, with revisions effective June 1, 2022.
3. Website Interactive Map. We would like to have this in place prior to the CAC meetings. We have also been refreshing the web site.
4. Monitoring program framework. We will begin discussing the existing monitoring program to see if it still meets the Commissions' and cities' needs. For example, is there value to continuing monitoring outflow in West Mississippi? Can we adjust the frequency of monitoring in lakes? Should we test for new parameters, do targeted monitoring on outfalls into the creek?

Design with community in mind

Z:\Shingle Creek\Fourth Generation Plan\M-march Comm 4th gen plan update.docx1

To: Shingle Creek WMO Commissioners

From: Todd Shoemaker, P.E.
Diane Spector
Katie Kemmitt

Date: March 4th, 2022

Subject: 2022 Shingle Creek Monitoring Plan

Recommended Commission Action	Review and approve the 2022 monitoring plan. Authorize purchase of new monitoring equipment and yearly recurring cost for BCP stream monitoring site.
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Each year the Commission budgets and undertakes monitoring activities, including routine stream and lake monitoring and volunteer lake, stream, and wetland monitoring. Water quality and quantity monitoring on Shingle Creek and select lakes is performed by Stantec staff and the USGS and macroinvertebrate monitoring in Shingle Creek is performed by volunteers through the Hennepin County Environmental Services’ (HCES) RiverWatch program. Lake monitoring is performed by volunteers through the Met Council’s Citizen Assisted Lake Monitoring Program (CAMP). Wetland monitoring is conducted through HCES’s Wetland Health Program (WHEP).

The purpose of this memo is to present the proposed 2022 monitoring program. This proposal is consistent with the program set forth in the Third Generation Watershed Management Plan, which includes routine monitoring tasks, specific monitoring efforts to support Commission administered grants, and monitoring to evaluate progress toward the TMDLs every five years. Table 1 below shows the TMDL review schedule for Shingle Creek. This year the Commission will complete the 5-year biotic and DO TMDL review report for Shingle and Bass Creeks.

Table 1. Shingle Creek watershed TMDL approvals and review dates.

TMDL	TMDL EPA Approval	Implementation Plan Approval	5-Year Progress Review
Shingle Creek Chloride	February 14, 2007	March 5, 2007	2014
Twin and Ryan Nutrients	November 9, 2007	November 13, 2007	2014
Crystal Nutrients	March 25, 2009	July 7, 2009	2016
Pomerleau, Bass, and Schmidt Nutrients	September 25, 2009	December 3, 2009	2017
Meadow Nutrients	March 23, 2010	June 14, 2010	2019
Cedar Island, Pike, and Eagle Nutrients	April 14, 2010	May 18, 2010	2018
Magda Nutrients	September 30, 2010	October 1, 2010	2019
Shingle and Bass Creeks Biotic and DO	November 4, 2011	January 30, 2012	2019-2022

2022 Proposed Monitoring Program

The information set forth below explains the various monitoring programs, their purpose, and the proposed costs and funding.

Table 2. 2022 proposed monitoring program budget and cost.

Activity	2022 Budget	2022 Proposed
<i>Routine Stream Monitoring</i>		
Equipment Installation/Deinstallation	\$35,000	\$4,960
Routine monitoring		\$13,215
Storm monitoring		\$7,895
Winter monitoring		\$3,615
Rating curve updates		\$1,460
Biotic sampling		\$3,855
Equipment upgrades at BCP	Grant funded through Bass Lake Stream Restoration Project	\$4,940 ¹
<i>Routine Lake Monitoring</i>		
Intensive Lake WQ Monitoring (Magda, Schmidt)	\$28,000	\$12,500
Aquatic Vegetation Surveys (Magda, Schmidt)		\$10,180
Fish survey (Magda)		\$5,320
<i>Monitoring to Support Grant Projects (funded by grants, not budget)</i>		
Bass and Pomerleau CLP delineation	N/A	\$3,925
Meadow Lake WQ Monitoring, SAV survey, fish survey, and sediment coring	N/A	\$19,265
Crystal Lake WQ Monitoring, CLP delineation, SAV survey, carp survey, and sediment coring	N/A	\$36,080

¹See attached quote for equipment breakdown

ROUTINE STREAM MONITORING

Routine Stream Flow and Water Quality Monitoring. The Commission has routinely monitored stream flow and water quality in Shingle Creek since 1996. Two locations, one downstream of Humboldt Avenue in Minneapolis (“SC-0,” see attached Figure 1 for all monitoring locations) and one upstream of Zane Avenue in Brooklyn Park (“SC-2”) have been monitored for water quantity and various water quality chemical parameters. In 2007, the monitoring location upstream of Zane Avenue was moved from upstream to just downstream of Brooklyn Boulevard in order to obtain a better stage-discharge relationship. This site is identified as SC-3 and SC-2 is no longer monitored. In 2015 Bass Creek (“BCP” on Figure 1) was added as a third site to be routinely monitored for water quality and conductivity. The

Bass Creek monitoring station has helped provide better information about water quality in Bass Creek, which is impaired for chloride and biota.

A fourth site at Queen Avenue in Minneapolis (“SC-1”) is monitored for flow by the US Geological Survey (USGS) as a part of its ongoing National Assessment of Water Quality (NAWQA). Chemical parameters are no longer routinely measured at the USGS site, except for continuous conductivity and temperature. That data are available on-line real-time at [SHINGLE CREEK AT QUEEN AVE IN MINNEAPOLIS, MN - USGS Water Data for the Nation](#). The Commission also partners financially with the USGS in the operation of the Queen Avenue monitoring station.

A more detailed discussion and breakdown of the routine stream flow and water quality monitoring activities and costs is shown in Table 1 of Attachment 1.

Monitoring Equipment. New stream level, temperature, and specific conductivity equipment will be purchased and deployed for BCP under the Bass Lake Stream Restoration project. The full cost shown in the attached equipment quote would be covered by the grant, but there will be a recurring, yearly cell data plan cost. The yearly cell data plan is \$137.40 per year.

Planning Budget. The remaining budget will be used to fund planning meetings and cover other tasks related to field season preparation and troubleshooting.

LAKE MONITORING

Intensive Lake TMDL Monitoring. To track the effectiveness of BMP implementation in improving lake water quality, the Commission routinely performs intensive lake monitoring to supplement the volunteer surface monitoring. Because the Commission’s goals include achieving delisting of lakes that meet their TMDLs and water quality, the Third Generation monitoring plan includes more rigorous lake monitoring sufficient to demonstrate to the MPCA and EPA that conditions have improved. Attachment 2 shows the lake monitoring schedule from the Third Generation Plan, updated to reflect the actual monitoring completed.

For 2022, Schmidt Lake and Lake Magda will be monitored biweekly. The water quality data collected for the lakes will include surface and deep-water samples, water column temperature/DO profiles, and zooplankton and phytoplankton sampling. A more detailed discussion and breakdown of these routine monitoring activities and costs is shown in Table 1 of Attachment 2. Note that 2017 marked the point where we completed a full round of sampling for all lakes and the Commission is now on to round two of Intensive Lake monitoring to support the 5-Year TMDL Reviews.

Aquatic Vegetation Surveys. A component of the intensive monitoring is to obtain or update surveys of lake aquatic vegetation. As we have discussed with the Commission in the past, aquatic vegetation plays an important role in water quality and biotic integrity, and the vegetation community can change as water quality changes. For 2022, surveys for Schmidt and Magda will be updated in tandem with the intensive monitoring. A breakdown of this monitoring activity and costs is shown in Table 2 of Attachment 2.

Fish Surveys. A fisheries survey will be completed on Lake Magda in 2022. A fisheries survey will be completed on Schmidt Lake if budget allows.

MONITORING TO SUPPORT BASS AND POMERLEAU GRANT PROJECT

The following monitoring tasks are built into ongoing grant projects. While not funded from the Commission's general fund budget, they are presented here for completeness.

The Bass and Pomerleau Alum project aimed to address nutrient impairments wrapped up in December 2021. Alum was first applied in 2019 to the lakes and was applied again in 2020 to further reduce phosphorus concentrations in the water. The Watershed agreed to provide up to 5 years of invasive species monitoring and treatment. A detailed breakdown of the proposed monitoring activity on Bass and Pomerleau Lakes and their associated costs are shown in Table 3-1 of Attachment 3.

Aquatic Vegetation Surveys. A full CLP delineation on Bass and a visual delineation on Pomerleau will occur in Spring 2022. Bass Lake will likely be treated with herbicide for CLP abundance. A breakdown of this monitoring activity and costs is shown in Table 3 of Attachment 3.

MONITORING TO SUPPORT CRYSTAL LAKE GRANT PROJECT

The Crystal Lake Grant Project began in 2020. This project includes carp assessment and tracking, alum application, carp removal, SAV surveys, and water quality monitoring and intends to address Crystal Lake's impairment for nutrients. The second year of this grant will be focused on fisheries, water quality, and vegetation data that will allow us to track changes to the lake as nutrient management occurs. Summer 2022 monitoring will track the impact of the Fall 2021 alum treatment on the lake. A detailed breakdown of the proposed monitoring activity on Crystal Lake and their associated costs are shown in Table 3-2 of Attachment 3.

Lake Monitoring. Regular water quality monitoring will be conducted on Crystal Lake in 2022. Crystal Lake will be monitored twice monthly, late May-September. The water quality data collected for the lake will include surface and deep-water samples, water column temperature/DO profiles, and zooplankton and phytoplankton sampling.

Aquatic Vegetation Surveys. A spring and fall aquatic vegetation survey will be performed on Crystal Lake. Aquatic vegetation plays an important role in water quality and biotic integrity, and the vegetation community can change as water quality and invasive species presence changes. The fall aquatic vegetation survey will show impacts to the vegetation community after the alum treatment. The surveys will be compared to the summer 2021 and 2020 surveys.

Fish Surveys. The DNR planned a general fisheries survey on Crystal Lake in 2020. The survey did not happen due to COVID-19. If the DNR plans to update the survey in 2022, we will supplement their survey with a near-shore survey for fish index of biological integrity (IBI) calculation.

Carp. In 2022 a second round of carp removals will occur on the lake. Preceding carp removals, Stantec will perform a CPUE population estimate and implant PIT tags. Results from the PIT tags will be used to estimate the population following 2022 removals.

Sediment Coring. In 2022 a follow-up round of sediment cores will be collected from the lake to assess success of the first alum treatment and plan dosing for the second alum treatment planned for Fall 2022.

MONITORING TO SUPPORT MEADOW LAKE GRANT PROJECT

The Meadow Lake Drawdown project began in Fall 2021. The project includes adaptive management to control the fathead minnow and CLP populations in the lake and address the nutrient impairment. The first summer season of this project will include monitoring to assess the success of the drawdown at controlling fish and invasive vegetation and will inform future management decision. Monitoring will include a fish survey, a vegetation survey, and monthly water quality monitoring including phytoplankton and zooplankton samples. A detailed breakdown of the proposed monitoring activity on Meadow Lake and their associated costs are shown in Table 3-3 of Attachment 3.

VOLUNTEER MONITORING

Volunteer Lake Monitoring. The Shingle Creek Commission has participated in the Met Council's "Citizen Assisted Lake Monitoring Program" (CAMP) since 1993. This program trains volunteers to take surface water samples and make water quality observations from late spring to early fall, using standardized reporting techniques and forms. The CAMP program has been the Commission's primary means of obtaining ongoing lake water quality data. This program is also an NPDES Education and Outreach BMP.

CAMP was initiated by the Met Council to supplement the water quality monitoring performed by Met Council staff and to increase our knowledge of water quality of area lakes. Volunteers in the program monitor the lakes every other week from mid-April to mid-October. They measure surface water temperature and Secchi depth, and collect surface water samples that are analyzed by the Met Council for total phosphorous, total Kjeldahl nitrogen, and chlorophyll-a. The volunteers also judge the appearance of the lake, its odor, and its suitability for recreation.

The Met Council charges \$760 per lake to cover the cost of supplies for volunteers, analysis of samples, and the Regional Reports. The Commission owns seven equipment kits purchased in past years and will not have to purchase any more kits unless key equipment needs to be replaced.

Lakes are monitored on a rotating schedule. The larger lakes are monitored every other year while the smaller lakes are monitored every three years. It is assumed that when a lake undergoes the intensive sampling program, no CAMP monitoring will be performed that year. Lakes scheduled for 2022 volunteer lake monitoring are Bass Lake, and Upper, Middle, and Lower Twin Lakes. The 2022 budget is \$3,040.

Volunteer Stream Monitoring. In previous years high school student volunteers conduct macroinvertebrate monitoring through Hennepin County Environmental Services' RiverWatch Program at two locations on Shingle Creek (see Figure 1 for location). The Commission contracts with Hennepin County for this service at a cost of \$1,000 per site. Hennepin County maintains an interactive online map showing locations throughout the county and stream grades going back to 1996: hennepin.us/riverwatch. One site was monitored in 2021: Shingle Creek in Webber Park. The 2020 budget includes \$1,000 to monitor one site.

Volunteer Wetland Monitoring. In 2007 the Commission began participating in Hennepin County Environmental Services' Wetland Health Evaluation Program (WHEP), a volunteer monitoring program. Through this program, adult volunteers monitor vegetative diversity and macroinvertebrate communities. In 2021, there were no wetlands monitored in Shingle Creek. Hennepin County has an interactive online map showing WHEP locations throughout the County: hennepin.us/your-government/get-involved/wetland-health-evaluation-program. The 2021 budget includes \$2,000 to monitor two wetlands. We recommend that staff work with the cities to identify sites for 2022.

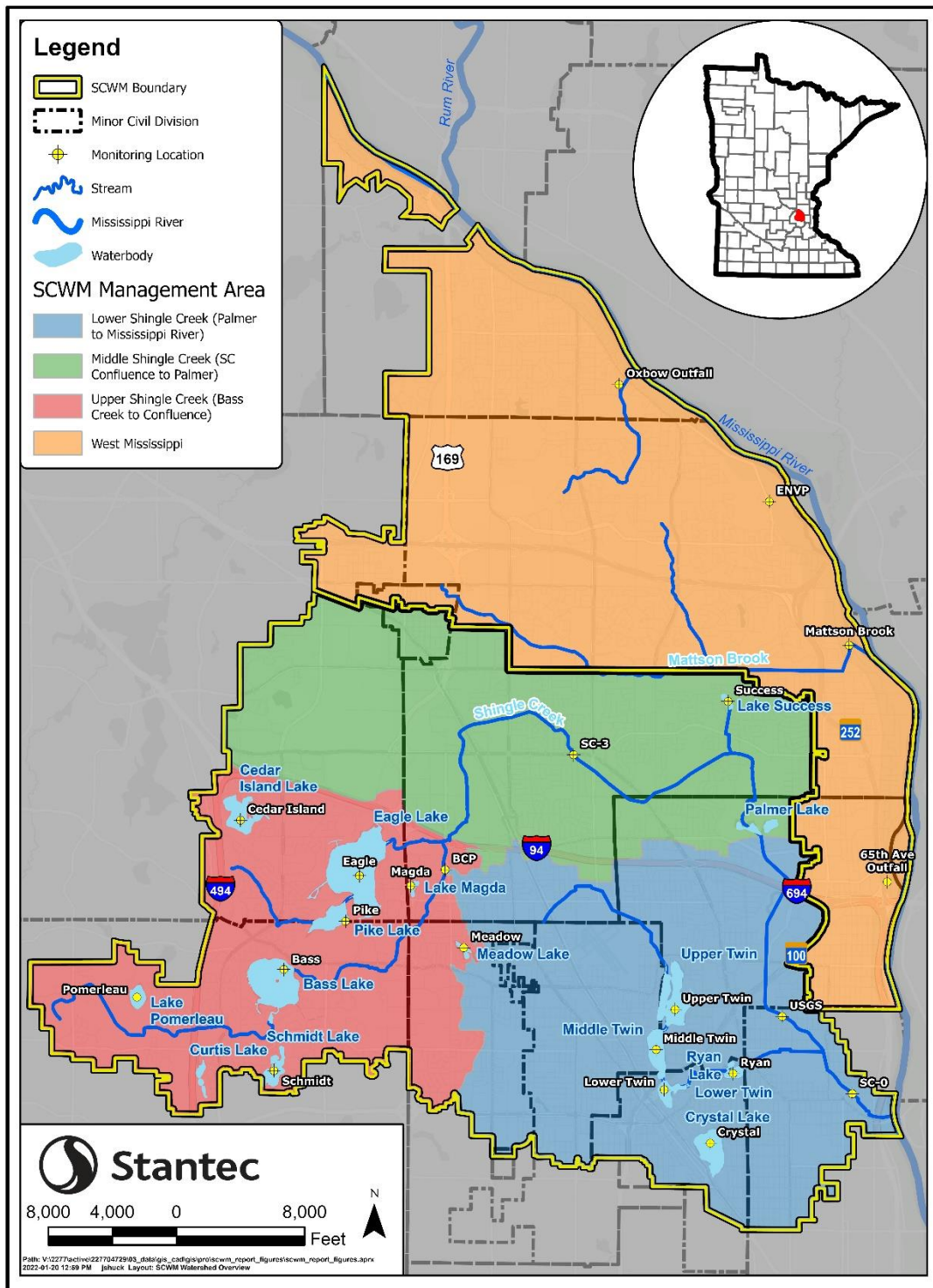


Figure 1. Shingle Creek watershed monitoring locations.

**Attachment 1
Stream Monitoring Detail
March 2022**

Sites:

Routine (bi-weekly) and storm event monitoring of flow and water quality at the outlet (SC-0), Brooklyn Boulevard (SC-3), Bass Creek (BCP) sites.

Constituents:

Lab analyses for the stream monitoring sites include total phosphorus (TP), total dissolved phosphorus (TDP), soluble reactive phosphorus (ortho-P), total suspended solids (TSS), *E. coli*, and chloride. Field measurements at all sites will include pH, dissolved oxygen, temperature, transparency tube, and conductivity.

Frequency:

Stream Routine: SC-0, SC-3 and the Bass Creek Outlet will be monitored once every two weeks from April 1 to October 31, 2021.

Storms: Target 6 storm composite samples throughout the monitoring season (April through October) at SC-0, SC-3, and BCP-1.

Winter: Target monthly chloride sampling November through March at USGS, SC-0, SC-3, and BCP-1.

Table 1-1. Activity and cost breakdown for Shingle Creek 2021 routine stream monitoring.

ACTIVITY	HOURS	COST
Install/remove equipment	40	\$4,960
Routine monitoring	90	\$13,215
Storm monitoring	46	\$7,895
Winter monitoring	26	\$3,615
Rating curve updates	13	\$1,460
Potential biotic sampling	30	\$3,855
TOTAL		\$35,000

**Attachment 2
Lake Monitoring Detail
March 2022**

Sites:

Magda and Schmidt Lakes

Intensive Monitoring Constituents:

Lab analyses include total phosphorus, soluble reactive phosphorus, total suspended solids, chlorophyll-a, zooplankton, and phytoplankton. Field measurements include dissolved oxygen, temperature, pH, and conductivity water column profiles.

Intensive Monitoring Frequency:

The lakes will be sampled for water quality twice monthly from late May - September or until fall turnover. Vegetation surveys will be conducted on both lakes in Spring and Fall. A general fisheries survey will be performed on Lake Magda and on Schmidt if budget allows.

Table 2-1. Activity and cost breakdown for Cedar Island and Success intensive lake monitoring.

ACTIVITY	HOURS	COST
Biweekly water quality monitoring	72	\$12,500
Spring and Fall SAV surveys	70	\$10,180
Fish survey (Magda)	41	\$5,320
TOTAL	197	\$28,000

**Attachment 3
Monitoring to Support Grant Projects
March 2022**

Sites:

Bass and Pomerleau Lakes (CLP delineations); Crystal Lake (SAV surveys, water quality monitoring, near-shore fisheries survey, sediment coring); Meadow Lake (SAV survey, water quality monitoring, fisheries survey).

Intensive Monitoring Constituents:

Lab analyses for Bass, Pomerleau, and Crystal Lakes monitoring will include surface samples of total phosphorus, soluble reactive phosphorus, total suspended solids, and chlorophyll-a. Deep water samples for all 3 lakes: total phosphorus and soluble reactive phosphorus. Field measurements for each basin will include dissolved oxygen, temperature, pH, and conductivity water column profiles

Intensive Monitoring Frequency:

Bass, Pomerleau, and Crystal Lakes will be sampled for water quality twice monthly from late May through September 2021. Meadow Lake will be sampled for water quality once monthly as able.

Table 3-1. Activity and cost breakdown for Bass and Pomerleau Lakes Grant project CLP delineation.

ACTIVITY	HOURS	COST
Perform CLP delineations	29	\$3,925
TOTAL	29	\$3,925

Table 3-2. Activity and cost breakdown for Crystal Lake water quality monitoring, fish surveying, and vegetation survey (grant funded).

ACTIVITY	HOURS	COST
Biweekly water quality monitoring	60	\$9,300
Spring and Fall SAV surveys	40	\$5,745
Carp CPUE and tagging	22	\$3,235
Sediment coring	16	\$14,390
Nearshore fish survey	28	\$34,10
TOTAL	166	\$36,080

Table 3-3. Activity and cost breakdown for Meadow Lake water quality monitoring (grant funded).

ACTIVITY	HOURS	COST
Biweekly water quality monitoring	48	\$6,685
Spring and Fall SAV surveys	17	\$2,720
Fisheries survey	21	\$2,705
Sediment coring	14	\$7,155
	100	\$19,265

Table 5. Third Generation Plan lake monitoring schedule.

Lake	Water Quality Monitoring											Aquatic Vegetation Survey											Sediment Core Assessment*									
	12	13	14	15	16	17	18	19	20	21	22	12	13	14	15	16	17	18	19	20	21	22	08	09	10	11	12	13	14	15	16	
Bass			c	x		x		g	g	g	x			c				c			g				c							
Eagle				c					c	x					c					c											c	
Pike				c					c	x					c					c				c								
Twin Middle	c		x		x		g		x		x	c							g													
Ryan	x	c					c		x			c						c								c						
Schmidt			c					c		x	c		c							c			c			c						
Twin Lower	c		x				g		x		x	c							g							c						
Cedar Island				c				x		c												c				c						
Crystal		c	x		x		c		g	g	g		c								g	g	g	c								
Pomerleau			x			c		g	g									c			g						c					
Twin Upper	c		x				g		x		x	c				c		g						c								
Magda	x			x		c				x	c						c						c					c				
Meadow			x		c			x	x	x	g					c							g		c							
Success			x		c			x	x	c						c							c									

*No additional sediment coring is anticipated after 2016.

- g Grant monitored
- x Volunteer monitored (CAMP)
- c Commission monitored

Date	22 Feb 2022
Quotation Number	22-024637
Valid For	30 Days

Bill To:
 Stantec - Golden Valley MN
 7500 Olson Memorial Highway
 Golden Valley, Minnesota 55427
 katie.kemmitt@stantec.com

Ship To:
 Stantec - Golden Valley MN
 7500 Olson Memorial Highway Suite 300
 Golden Valley, Minnesota 55427

PLS-C

No	Part #	Product Description	Qty	Unit Price (USD)	Ext. Price (USD)
1	63.038.001.9051	PLS-C, PRESSURE LEVEL, SDI12, 0-10M	1.0	2,230.71	2,230.71
2	97.000.033.9.5	PLS/PLS-C PROBE CABLE, METERS (price per meter) Notes: Need to verify cable length. This is billed per meter, with a 20m length as a place-holder for now.	20.0	5.53	110.60
3	63.037.025.3.2	FAD 5 HUMIDITY ABSORBER CONNECTION BOX	1.0	154.63	154.63
4	96.140.173.9.5	BRACKET, STRAIGHT CABLE SUSPENSION Straight hanging cable suspension bracket for use with OTT pressure sensors	1.0	19.92	19.92
5	SC-Surcharge	Supply Chain Surcharge			327.06
Group Subtotal Price					2,842.92

XLINK500 LTE with Verizon Cellular Modem and Annual Data Plan

No	Part #	Product Description	Qty	Unit Price (USD)	Ext. Price (USD)
5	XLINK500-C7-1	XLink 500 with North American 4G LTE	1.0	1,565.42	1,565.42
6	1291-1033	CDMA Antenna - Indoor mount, adhesive back, 12 inch cable, SMA-M Connector	1.0	17.18	17.18
7	VCDMA.ACT-S	Activation - One Time Charge	1.0	72.16	72.16
8	VCDMA.1MB.PLAN-S	Monthly Plan - Per Month	12.0	11.45	137.40
9	SC-Surcharge	Supply Chain Surcharge			205.73
Group Subtotal Price					1,997.89

Notes:

USD

Payment Terms	Net 30 w/Approved Credit
Freight Terms	FCA-Free Carrier
Expected Delivery Time	
Sales Tax	Proof of tax exempt status or payment of sales tax is the responsibility of the buyer

Total Price :	4,840.81
Tax :	TBD
Freight :	98.96
Grand Total Price :	4,939.77

If you have any questions or need further information, please don't hesitate to contact me. I look forward to hearing from you soon.

Sincerely,
 Miles Corcoran
 Email: miles.corcoran@otthydromet.com, Phone:
 Prepared by:Miles Corcoran

Terms and Conditions

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Advantages of Simplified Shipping and Handling

Safe & Fast Delivery

- Receive tracking numbers on your order acknowledgement
- Hach will assist with claims if an order is lost or damaged in shipment

Save Time - Less Hassle

- No need to set up deliveries for orders or to schedule pickup
- Hach ships order as product is available, at no additional charge, when simplified shipping and handling is used

Save Money

- No additional invoice to process – save on time and administrative costs
- Only pay shipping once, even if multiple shipments are required

Standard Simplified Shipping and Handling Charges

Pricing Effective 8/31/2019

Total Price of Merchandise Ordered	Standard Surface (Mainland USA)	Second Day Delivery (Mainland USA)	Next Day Delivery (Mainland USA)	Second Day Delivery (Alaska and Hawaii)	Next Day Delivery (Alaska and Hawaii)
\$0.00 – \$49.99	\$11.99	\$29.99	\$55.93	\$48.14	\$91.51
\$50.00 – \$149.99	\$19.06	\$56.18	\$106.00	\$80.56	\$153.15
\$150.00 – \$349.99	\$33.48	\$89.32	\$181.94	\$112.71	\$219.36
\$350.00 – \$649.99	\$46.63	\$121.94	\$242.50	\$152.43	\$295.17
\$650.00 – \$949.99	\$58.77	\$127.42	\$266.65	\$157.77	\$297.40
\$950.00 – \$1,999.99	\$73.94	\$157.23	\$332.46	\$187.11	\$362.04
\$2,000.00 – \$3,999.99	\$85.36	\$167.09	\$342.29	\$194.36	\$369.69
\$4,000.00 – \$5,999.99	\$98.96	\$173.55	\$358.82	\$195.26	\$380.35
\$6,000.00 – \$7,999.99	\$116.93	\$197.60	\$408.56	\$215.38	\$415.24
\$8,000.00 – \$9,999.99	\$133.43	\$224.55	\$438.79	\$240.27	\$455.68
Over \$10,000	2% of Net Order Value	4% of Net Order Value	6% of Net Order Value	4% of Net Order Value	6% of Net Order Value

<https://www.otthydro.com/en/policies/terms-and-conditions-of-sale?origin=footer&c1=policies&c2=terms-and-conditions-of-sale&cli>

To: West Mississippi WMO Commissioners

From: Todd Shoemaker, P.E.
Diane Spector
Katie Kemmitt

Date: March 4th, 2022

Subject: 2022 West Mississippi Monitoring Plan

**Recommended
Commission Action**

Review and approve the 2022 monitoring plan. Review and approve professional services agreement with the MWMO to complete 65th Avenue outfall monitoring.

The West Mississippi Watershed Management Commission for many years did not routinely monitor water quality in the few streams that are present in the watershed. The Commission undertook stream and outfall monitoring in 1990-1992 and found that the water quality of runoff from the watershed was generally within ecoregion norms. Since much of the watershed was poised to develop under Commission rules regulating the quality and rate of runoff, the Commission elected to discontinue further monitoring. In 2010 and 2011 the Commission authorized a repeat of the 1990-1992 monitoring, to determine current conditions and evaluate whether the development rules were protective of downstream water quality.

The Third Generation Plan and subsequent budgets incorporated ongoing, routine monitoring for West Mississippi that includes monitoring flow and water quality at two sites per year on a rotating basis. In 2020 the Commission monitored the Environmental Preserve outlet and the 65th Avenue outfall (Figure 1). Results of 2021 monitoring will be presented in the Annual Water Quality Report in May 2022.

Routine Monitoring. Figure 1 shows the West Mississippi outfall sites sampled in 2010-2011, and 2013-2019 (no monitoring was conducted in 2012). The 65th Avenue outfall and Oxbow Creek will be monitored in 2022 for flow and water quality using automatic samplers. Continuous flow will be monitored using pressure transducers, and water quality will be analyzed through field parameter measurements, periodic grab samples, and storm composite sampling using ISCO automated samplers purchased by the Commission in 2010.

Due to continued difficulties accessing the 65th Avenue outfall in the past, West Mississippi WMC partnered with the Mississippi Watershed Management Organization (MWMO) to perform the

monitoring in 2020 and 2021. MWMO has experience and equipment for doing stream monitoring in confined spaces like stormwater pipes and can perform the monitoring safely and efficiently. Results from MWMO's monitoring have been satisfactory and the partnership will be continued in 2022.

A detailed discussion and breakdown of these routine monitoring activities and costs is shown in Table 1 of Attachment 1. The 2022 budget for routine monitoring is \$22,600.

Volunteer Stream Monitoring. In previous years high school student volunteers conducted macroinvertebrate monitoring through Hennepin County Environmental Services' RiverWatch Program at one location in West Mississippi – Mattson Brook (see Figure 1 for location). The Commission contracts with Hennepin County for this service at a cost of \$1,000 per site. Hennepin County maintains an interactive online map showing locations throughout the county and stream grades going back to 1996: hennepin.us/riverwatch. In the past few years Hennepin County has been finding it difficult to recruit a high school to monitor this site. The Commission did not budget for this monitoring in 2022.

Volunteer Wetland Monitoring. In 2007 the Commission began participating in Hennepin County Environmental Services' Wetland Health Evaluation Program (WHEP), a volunteer monitoring program. Through this program, adult volunteers monitor vegetative diversity and macroinvertebrate communities. In 2021, no wetlands in the West Mississippi Watershed were monitored. Hennepin County also has an interactive online map showing WHEP locations throughout the County: hennepin.us/your-government/get-involved/wetland-health-evaluation-program. The 2022 budget includes \$2,000 to monitor two wetlands. We recommend that staff work with the cities to identify sites for 2022.

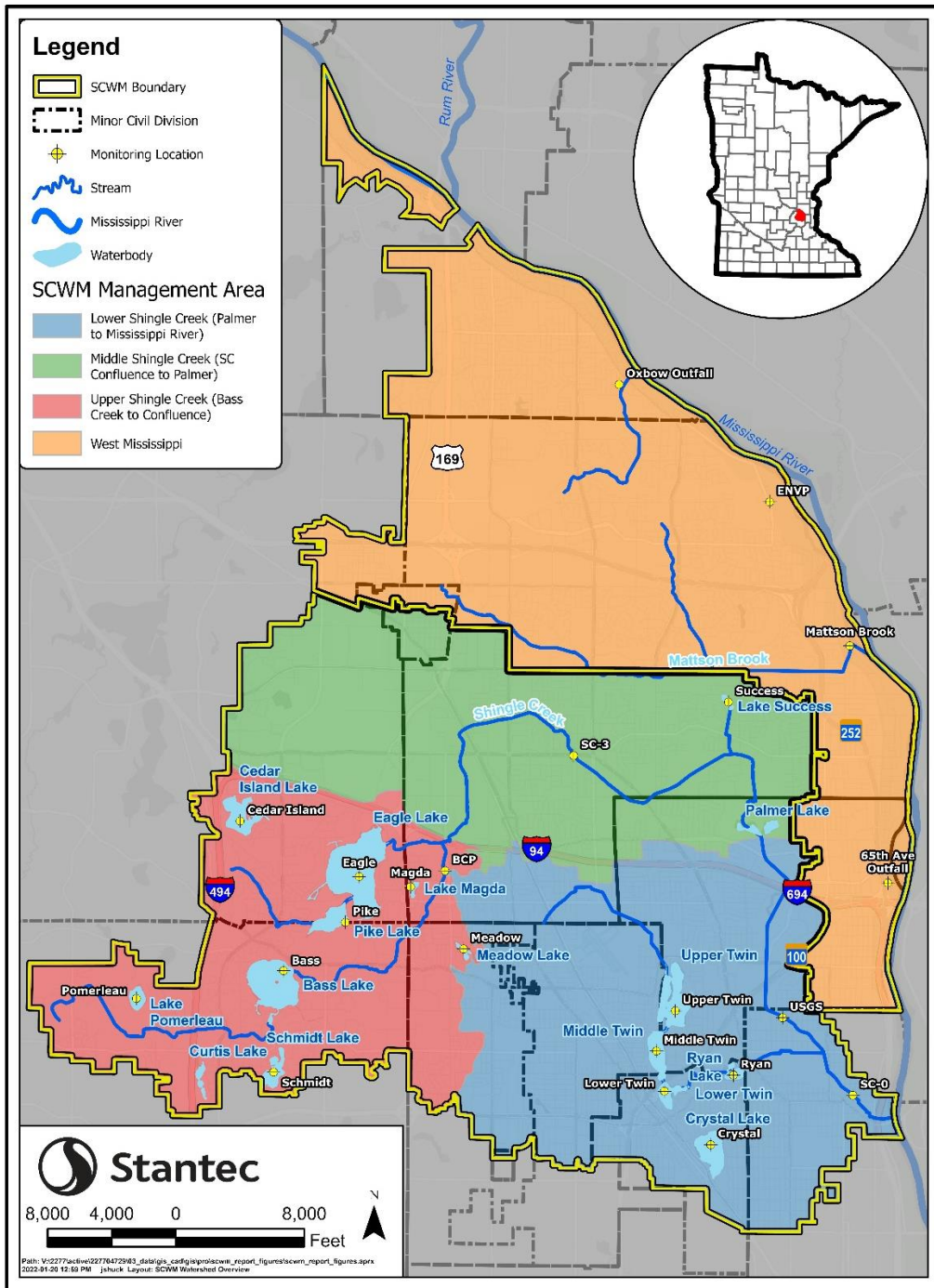


Figure 1. West Mississippi watershed monitoring locations.

**Attachment 1
Routine Monitoring Program
March 2022**

Sites:

65th Avenue Outfall and Oxbow Creek sampling locations

Constituents:

Lab analyses include total phosphorus (TP), ortho-phosphorus (ortho-P), total suspended solids (TSS), and chloride. Field measurements include flow, pH, dissolved oxygen, temperature, and conductivity.

Frequency:

Routine: Target one field grab sample per month from April through October at Oxbow Creek. Target one field grab sample per month year-round at 65th Avenue.

Storms: Target approximately one storm composite sample per month from April through October using ISCO automated samplers.

Table 1. Activity and cost breakdown for West Mississippi 2022 monitoring.

ACTIVITY	COST
Install/remove equipment	\$1,984
Collect routine samples and maintain equipment	\$3,296
Collect storm samples	\$3,705
Data entry/maintaining rating curves	\$1,200
Analytical services (RMB Laboratories)	\$905
Contract with MWMO for 65 th Avenue Outfall	\$11,510
TOTAL	\$22,600

Table 2. Activity and cost breakdown from MWMO for 65th Ave monitoring in 2022.

ACTIVITY	COST
Data management	\$1,152
Collect samples	\$1,782
Equipment Maintenance	\$2,148
Mileage – Expense	\$349
Analytical services (Metropolitan Environmental Lab)	\$2,088
Admin – invoicing and annual report	\$2,072
Contingency (20%)	\$1,918

TOTAL	\$11,510
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PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT is made by and between the West Mississippi Watershed Management Commission (“WMWMC”), and the Mississippi Watershed Management Organization (“MWMO”), a Minnesota joint powers organization, for stormwater monitoring services. The WMWMC and the MWMO may hereinafter be referred to individually as a “party” or collectively as the “parties.” The parties hereby agree as follows:

I. SCOPE OF AGREEMENT

The MWMO agrees to perform stormwater monitoring services for the WMWMC as described on Exhibit A, which is attached to and made a part of this Agreement.

II. COMPENSATION

The MWMO will be compensated at the intervals and at the rates stated in Exhibit A. The total compensation under this Agreement will not exceed **\$11,509.73**. The MWMO shall submit itemized invoices for services rendered.

III. EXPENSE REIMBURSEMENT

Reimbursable expenses identified on Exhibit A will be paid upon submission of itemized invoice to the WMWMC. The WMWMC agrees to pay for reimbursable expenses, if reasonably and necessarily incurred. The parties agree that in no event shall reimbursable expenses be incurred without prior written approval from WMWMC. This sum, if any, is not included in the compensation set out in Paragraph II, Compensation.

IV. EFFECTIVE DATE AND TERMINATION DATE

This Agreement shall be in full force and effect from **January 1, 2022 through June 15, 2023**, unless otherwise extended by mutual agreement of the parties or is terminated earlier under Paragraph XVI, Cancellation, Default and Remedies.

V. SUBSTITUTIONS AND ASSIGNMENTS

Services by the MWMO will be performed by the following person(s):

Udai B. Singh, PhD, PE, Water Resources Director,
Brian Jastram, BS, Monitoring and Instrumentation Specialist,

Brittany Faust, BA, Water Resources Specialist,
James Rudolph, BS, Environmental Specialist,
John Mueller, BS, Environmental Specialist,
and Hired interns.

Upon approval by the WMWMC, the MWMO may substitute other persons to perform the services. If substitution is permitted by the WMWMC, the MWMO shall furnish information to the WMWMC to allow proper review of the qualifications of the substituted person. No assignment of this Agreement shall be permitted without the written amendment signed by the WMWMC and the MWMO.

VI. CONTRACT ADMINISTRATION

All provisions of this Agreement shall be coordinated and administered by the people identified in Paragraph XVII.

VII. AMENDMENTS

No amendments may be made to this Agreement except in writing signed by both parties.

VIII. INDEPENDENT CONTRACTOR

The MWMO and its employees are not employees of the WMWMC. It is agreed that the MWMO and its employees will act as an independent contractor and acquire no rights to tenure, workers' compensation benefits, unemployment compensation benefits, medical and hospital benefits, sick and vacation leave, severance pay, pension benefits or other rights or benefits offered to employees of the WMWMC, its departments or agencies. The parties agree that the MWMO and its employees will not act as the agent, representative or employee of the WMWMC.

IX. INDEMNIFICATION

Each party shall be responsible for its own acts and omissions and the results thereof to the extent authorized by law. Each party agrees to defend, indemnify and hold the other harmless from any and all liability, claims, causes of action, judgments, damages, losses, costs, or expenses, including reasonable attorney's fees, resulting directly or indirectly from the party's negligent actions or inactions. The party seeking to be indemnified and defended shall provide timely notice to the other party when the claim is brought. The party undertaking the defense shall retain all rights and defenses available to the party

indemnified and no immunities or limits on liability are hereby waived that are otherwise available to either party.

X. CONTRACTOR'S INSURANCE

Each party shall be responsible for maintaining its own liability insurance with limits at least matching the liability limits established in Minnesota Statutes, section 466.04 and, to the extent required by law, workers' compensation insurance for its own employees.

XI. DATA PRACTICES

The parties are required to comply with the Minnesota Government Data Practices Act and all other applicable state and federal laws relating to data privacy or confidentiality. Each party agrees to immediately report to the other party any requests from third parties for information relating to this Agreement. The parties agree to respond promptly to inquiries from the other party concerning data requests. Each party agrees to hold the other party, its officers, and employees harmless from any claims resulting from the unlawful disclosure or use of data protected under state and federal laws by the other party.

XII. COMPLIANCE WITH THE LAW

Each party agrees to comply with all applicable federal, state and local laws, rules, regulations, and ordinances applicable to the performance of its duties under this Agreement including, but not limited to, the laws relating to non-discrimination in hiring or labor practices.

XIII. AUDITS

The MWMO agrees that the WMWMC, the State Auditor or any of their duly authorized representatives, at any time during normal business hours and as often as they may reasonably deem necessary, shall have access to and the right to examine, audit, excerpt and transcribe any books, documents, papers, and records that are relevant and involve transactions relating to this Agreement for a period of at least 6 years.

XIV. APPLICABLE LAW

The law of the State of Minnesota shall govern all interpretations of this Agreement, and the appropriate venue and jurisdiction for any litigation that may arise under this Agreement

will be in and under those courts located within the County of Hennepin, State of Minnesota, regardless of the place of business, residence or incorporation of the MWMO.

XV. CONFLICT AND PRIORITY

In the event that a material conflict is found between provisions in this Agreement, the MWMO’s Proposal, if any, or the WMWMC’s Request for Proposals, if any, the provisions in the following rank order shall take precedence: 1) Exhibit A; 2) Agreement; 3) Proposal; and last 4) Request for Proposals.

XVI. CANCELLATION, DEFAULT AND REMEDIES

Either party may cancel this Agreement upon thirty (30) days written notice, except that if the MWMO fails to fulfill its obligations under this Agreement in a proper and timely manner, or otherwise violates the terms of this Agreement, the WMWMC has the right to terminate this Agreement immediately, if the MWMO has not cured the default after receiving seven (7) days written notice of the default. The MWMO will be paid for services rendered prior to the effective date of termination.

XVII. NOTICES

Any notice or demand, authorized or required under this Agreement shall be in writing and shall be sent by certified mail to the other party as follows:

To the MWMO: Brian Jastram (bjastram@mwmo.org) or
Dr. Udai B. Singh (usingh@mwmo.org)
Mississippi Watershed Management Organization
2522 Marshall Street NE,
Minneapolis, MN 55418-3329

To The WMWMC: Todd Shoemaker (todd.shoemaker@stantec.com), or
Jeff Storm (jstrom@stantec.com), or
Dian Spector (dspector@stantec.com)
Stantec
7500 Olson Memorial Highway Suite 300
Golden Valley, MN 55427

The parties being in Agreement, have caused this Agreement to be signed as follows:

[Signature page follows]

FOR THE MWMO:

By _____

Its _____

Date _____

By _____

Its _____

Date _____

FOR THE WMWMC:

By _____

Its _____

Date _____

By _____

Its _____

Date _____

Exhibit A

SERVICE PROVIDER'S Name/ Organization: MWMO	Federal EIN: 41-0544530
Mailing Address: 2522 Marshall ST NE Minneapolis, MN 55418	Telephone Number: 612-746-4970
Work Dates: January 1 st , 2022 to June 15 th , 2023 Monitoring period January 1, 2022 to December 31, 2022.	Email: bjastram@mwm.org Tel. 612-746-4985 usingh@mwm.org Tel. 612-746-4980

Background

The West Mississippi Watershed Management Commission (WMWMC) routinely measures flow and water quality at several stream and stormwater outfall sites throughout the West Mississippi Watershed.

WMWMC in 2020 contracted with MWMO to research, scope, design, installed, operate and maintain a stormwater outfall monitoring station to measure the quantity and quality of stormwater flowing through 65th Ave stormwater trunk line.

In 2022, the WMWMC plans to continue to monitor the outlet of the storm sewer trunk line that runs between 65th Avenue North in Brooklyn Center (referred to as the 65th Avenue Outfall). WMWMC would like to again employ the services of the MWMO to inspect, maintain, and operate the 65th Avenue stormwater trunk line stormwater outfall to monitor the stormwater quantity and water quality.

Scope of Services

MWMO staff will continue to inspect, maintain, and operate a stormwater outfall monitoring station that was installed in 2020 to measure the quantity and quality of stormwater flowing through the 65th Ave trunk line. Monitoring will continue year-round for 2022. Monitoring activities will be conducted as follows.

- **Flow monitoring:** continuously record stage/level and velocity (if possible) at a location upstream of pipe outlet to Mississippi River
- **Frequency:**
 - Target one field grab (non-event) sample per month

- Target one storm or melt event composite sample per month
- Field parameters to be collected:
 - General site conditions
 - Stage/level
 - Temperature
 - Conductivity
 - Dissolved Oxygen
 - pH
 - Transparency
- Laboratory water quality parameters to be sampled:
 - Total phosphorus
 - Ortho-phosphate
 - Total suspended solids
 - Chloride
 - *E. coli*

Budget

Water quality samples will be delivered to the Metropolitan Council Environmental Services Lab for analysis.

Table 1. Activity and cost breakdown for WMWMC 2021 Monitoring.

Activity	Cost
Data Management	\$1,152.00
Collect samples	\$1,782.00
Equipment Maintenance	\$2,148.00
Mileage – Expense	\$349.44
Analytical lab cost (Metropolitan Environmental Lab)	\$2088.00
Admin – (invoicing and annual report)	\$2072.00
Subtotal	\$9591.44
Contingency – 20%	\$1918.29
Total	\$11,509.73

Deliverables

1. All stormwater quantity and quality data will be delivered by 6/15/2023.
2. A monitoring report will be provided outlining the monitoring activities that were conducted and summary analysis of the data collected.

Payment Schedule

The cost of stormwater monitoring activities may not exceed **\$11,509.73**

A final itemized invoice must be submitted by the MWMO along with the stormwater quantity and quality data, no later than **June 15th 2023**. Payment will be made as soon as possible upon receiving the invoice and data.

To: Shingle Creek WMO Commissioners

From: Todd Shoemaker, P.E.
Diane Spector
Katie Kemmitt

Date: March 4th, 2022

Subject: Crystal Lake Management Plan 2022 Carp Removals

Recommended Commission Action	Review grant change order materials. Review and approve the attached contract with WSB for carp management on Crystal Lake.
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Carp removals on Crystal Lake in 2021 were extremely successful, with over 3,900 carp removed (an estimated ~33% of the lake's population), moving the lake closer to improved water quality. Because of the success of carp removals, staff recommend another field season of carp removal efforts in 2022 to bring the lake's carp population below harmful levels. The grant's carp removal task budget has been expended. In addition, one of two alum doses was successfully applied to the lake in September 2021. The alum treatment came in under budget at \$52,776.69. The second alum treatment will be applied in 2022 and is expected to cost a similar amount.

Staff previously received approval to move some of the projected excess funds from the alum treatment task to the carp removal task to fund 2022 carp removals in the project grant work plan. Staff submitted a grant change order with the MPCA and it was approved. The amended workplan with budget details is attached. The change has no impact on the scope and total cost of the project but will allow additional efforts of carp removal on the lake.

Stantec has partnered again with WSB to complete the 2022 carp removals. WSB will use the same methods as in 2021 and will use three baited nets to capture and remove carp in the lake. Up to two Stantec staff will assist with baiting and removing carp. Table 1 shows the not-to-exceed budget proposed by WSB. The full Scope of Work from WSB is attached. The grant change order will fully cover WSB's proposed budget and will have no impact on the Commission's match share.

Table 1. Estimated WSB project costs.

Crystal Lake box netting and seining 2022	Expenses	Env. Scientist	Env. Scientist	Env. Scientist	Line item total
Hourly rate		\$95	\$102	\$80	
Permitting and project management 2022		16			\$1,520
Installation of carp removal equipment		8	8	8	\$2,216
Trapping operations: At least one PIT array available during project to monitor timing of tagged fish arrivals	\$5,000	40	40	40	\$16,080
Uninstall of equipment, decontamination, and patching		6	6		\$1,182
Data analysis and reporting		10			\$950
Overall Project total					\$21,948

P/T related Contract Encumbering Order Change Order Form

Instructions: The revised workplan, budget detail sheet, and/or schedule **must be attached** to this form. The revisions should be shown in strikeout and underline. Refer to the Change Order clause in your contract.

Change Order information

Contractor name: Shingle Creek Wastershed Management

Agency Interest ID number: 187302 Activity ID number: PRO20190001

SWIFT Contract number: 169803 Purchase Order number: 3000025518

Funding information: 3000-R3237828-R32R319; 3000-R3237828-R32R319; 3000-R3237828-R32R319

Contractor's Project Manager: Judie Anderson Phone: 763-553-1144

Contractor's Project Manager email: judie@jass.biz

MPCA's Project Manager: Eric Alms Phone: 651-757-2589

Project name: Crystal Lake Management Plan

Task change/Scope of Work change

Explanation (including verbal authorization):

We propose to move \$40,380 dollars from Objective 1 to Objective 2. The first alum treatment applied in 2021 came in under budget. We expect the application in 2022 to cost a similar amount to the 2021 application, and thus will have extra grant and match funds available. Following the success of carp removal efforts in 2021, we propose another season of carp removal efforts in 2022. Additional carp removals will bring the carp population closer a density that won't be as harmful to the lake's water quality.

Signatures

(The Change Order form must be signed by the MPCA Project Manager and the Contractor. The signature below authorizes the Contractor to proceed with the items listed. The original Contract and any previous Change Orders and Amendments are incorporated into this Change Order by reference.)

By typing/signing my name below, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing this form.

Contractor

Signature: Judie Anderson
(This document has been electronically signed.)

Title: Administrator Date: 2/24/2022

MPCA Project Manager

Signature: Eric Alms
(This document has been electronically signed.)

Title: Watershed Project Manager Date: 03/01/2022

- Distribution:**
1. Contractor
 2. Project Manager uploads into Tempo/OnBase

Swift #:	169803
Purchase Order #:	3000025518
Agency Interest ID #:	187302
Activity ID #:	PRO20190001

Project title: Crystal Lake Management Plan

1. Project summary:

Organization: Shingle Creek Watershed Management Commission
Contractor contact name: Judie Anderson
Title: Administrator
Address: 3235 Fernbrook Lane
 Plymouth, MN 55447
Phone: 763-553-1144
Fax: 763-553-9326
Email: judie@jass.biz

Subcontractors/Partners:

Organization: Wenck Associates, Inc. (Wenck)
Project manager: Ed Matthiesen
Address: 7500 Olson Memorial Highway Suite 300
 Golden Valley, MN 55427
Phone: 763-252-6851
Fax: 952-831-1268
Email: ematthiesen@wenck.com

Organization: University of Wisconsin (UW)-Stout
Project manager: Bill James
Address: 123 E Jarvis Hall Science Wing
 Menominee, WI 54751
Phone: 715-232-2638
Email: jamesw@uwstout.edu

Organization: City of Robbinsdale (and their subcontractors determined through public bid: a firm specializing in alum treatments, commercial fishermen, and a firm specializing in aquatic herbicide treatment)
Project manager: Richard McCoy, Public Works Director/City Engineer
Address: 4100 Lakeview Avenue North
 Robbinsdale, MN 55422
Phone: 763-531-1260
Email: rmccoy@ci.robbinsdale.mn.us

Minnesota Pollution Control Agency (MPCA) contact:

MPCA project manager: Tim Schwarz
Title: Environmental Specialist
Address: 520 Lafayette Road North
St. Paul, MN 55155
Phone: (651) 757-2426
E-mail: timothy.schwarz@state.mn.us

Project information

Latitude/Longitude: 45.026758, -93.327305
County: Hennepin
Start Date: 01/01/2020 **End Date:** 08/31/2023
Cost: Grant: \$216,066, Match: \$154,440, Total: \$370,506

Project location:

a) Basin

Lake Superior Lower Mississippi/Cedar Upper Mississippi Minnesota Rainy
 Red River Des Moines Missouri St. Croix

b) Watershed name: Mississippi River – Twin Cities Watershed **HUC8:** 07010206

Organization type: Local/Regional government (county, SWCD, WD, etc.)
 State government
 Joint powers organization of local government

2. Statement of problems, opportunities, and existing conditions

Project background

Crystal Lake (AUID 27-0034-00) is a 126-acre nutrient-impaired lake located in the city of Robbinsdale. It is popular among anglers, and there are several city parks abutting the lake as well as a regional bike trail. There is a public boat landing on the south end and a fishing pier on the north end. Summer ten-year average total phosphorus (TP) concentration is 63 ug/L, compared to the deep lake standard of 40 ug/L. The excessive concentration of phosphorous causes nuisance algae blooms and has inhibited the growth of aquatic plants, limiting fish habitat and the aesthetic appeal of the lake. The carp in the lake mobilize phosphorus-containing sediment on the bottom as they feed, impacting water clarity and causing further phosphorus release. This is becoming an even greater issue as carp increase in density in the lake. Reduction in the in-lake phosphorus concentration and the carp population is needed to promote a healthy ecosystem and bring a greater recreational appeal to the lake.

The Crystal Lake Nutrient Total Maximum Daily Load (TMDL) was approved in 2008, and the cities of Robbinsdale and Minneapolis and Hennepin County have been actively implementing Best Management Practices (BMPs) in the lakeshed. The TMDL requires a 90% decrease in TP from internal sources (255 pounds) and a 59% decrease from watershed sources (256 pounds). In 2016, the Shingle Creek Watershed Management Commission completed a TMDL Progress Review. It estimated that the cities and county had achieved about 73 pounds of the required annual 256 pound TP wasteload reduction. The city of Crystal also installed and continues to run a hypolimnetic withdrawal flocculation treatment facility in Lakeview Terrace Park, which has averaged the removal of 147 pounds per year over the three years it has been in service. However, when the hypolimnetic water withdrawn for treatment becomes anoxic, the system produces a foul smell, which is not acceptable to the park users or the adjacent residential neighborhood. When there are odor issues, the system is switched over to epilimnetic withdrawal, which is less efficient at controlling phosphorus from sediment release.

In addition to nutrient issues, a recent carp assessment estimated the current mean biomass of carp in Crystal Lake as about 126 kg/ha. Research suggests that high densities of common carp can reduce submersed aquatic vegetation coverage, lower waterfowl populations, and increase turbidity. These impacts begin to occur when the carp population exceeds a 100 kg/ha critical density threshold (Bajer et al. 2009). Crystal Lake does not currently sustain a robust aquatic vegetation community, likely limited by the presence of carp and excess turbidity. Curly-leaf pondweed is known to be present in the system, although currently at low densities.

Project impact

The purpose of this project is to improve the water quality and ecological integrity of Crystal Lake to restore beneficial uses and progress the lake toward achieving the state water quality standard for TP. As the largest lake in the city of Robbinsdale and with significant adjacent park acreage and a public access, it is a popular destination for water recreation and fishing. The project takes a whole-lake management approach, significantly reducing internal phosphorus release from sediments, reducing the carp population to a more manageable carrying capacity, and as water clarity improves, encouraging the restoration of a healthy native plant community and addressing the potential increase in invasive aquatic plant populations.

The Crystal Lake Management Plan includes three components. The first is a lake alum treatment to seal the sediments and reduce the need and frequency of withdrawing from the hypolimnion. The second is carp harvesting to reduce the population to a level well below the impairment threshold. The third step, after alum treatment and carp removal, is the restoration of a healthy native aquatic vegetation community by treating invasive plants as water quality improves and take any necessary management steps to keep the lake healthy and native.

Upon application, alum forms a flocculant that binds with phosphorus to form an aluminum phosphate compound that can no longer be used as food by algae. As the flocculant slowly settles, some phosphorus is removed from the water column, along with other suspended particles. On the bottom of the lake, the flocculant forms a layer that acts as a phosphorus barrier. To maximize the effectiveness of the alum treatment, it will be performed in two doses. Initial sediment cores will be used to compute the effective dose, and water column dissolved oxygen (DO) measurements will be used to identify the anoxic zone and the limits of alum treatment. One-half the recommended dose will be applied the first year, and additional sediment cores taken and evaluated. Based on the initial results, dosing for the second treatment may be adjusted. Following the second treatment, a final set of sediment cores will be used to confirm the effectiveness of the treatment at reducing the sediment release rate. Alum treatments dosed correctly can achieve a 90-95% reduction in sediment release. The goal of the Crystal Lake alum treatment is a 90% reduction, or 255 pounds per year, which is the TMDL internal load reduction requirement. This improvement would allow the flocculation system to focus on reducing phosphorus in the epilimnion, which would help treat the watershed load and extend the life of the alum treatment.

An initial carp assessment has already been completed in September 2018. The assessment concluded that the carp biomass was just above the critical impairment threshold, but more importantly that the carp were relatively small in size. This suggests that carp issues in the lake are likely to worsen as they grow and reproduce. Prior to the alum treatment, the carp population assessment will be repeated and radio tracking frequency (RTF) tags placed in a sample of the fish for radio tracking to determine their overwintering locations. Based on an initial carp assessment, approximately 3,500-4,000 kg of carp will need to be removed from the lake to reduce the population density below the 100 kg/ha density threshold. The Shingle Creek Watershed Management Commission will work with the commercial fisherman assigned to this area to harvest carp and other undesirable rough fish. Fewer carp stirring up the bottom sediments should also result in less sediment and pollutants being contributed from the bottom of the lake, improving clarity.

Finally, the previously completed aquatic vegetation surveys demonstrate an extreme lack of submersed aquatic vegetation, with few native pondweed species common in healthy shallow and deep lakes throughout Minnesota. As water clarity improves post alum treatment and carp removal, a positive vegetative response is anticipated. Exactly what that would look like is unknown at this time. A desirable outcome would be one in which a diverse community of native vegetation becomes established, out-competing aquatic invasive species (AIS) but remaining below nuisance levels. However, because AIS have been observed in the lake during plant surveys and anecdotal evidence suggests these species used to be at nuisance levels along the northwest shore, the possibility exists that AIS may try to reestablish, requiring active management. The Shingle Creek Watershed Management Commission will monitor submersed aquatic vegetation for invasive aquatic plants and manage those by using spot treatments. This does not directly abate pollution, but the effective removal of invasive species does promote growth of a healthy natural ecosystem.

3. Goals, objectives, tasks, and subtasks

Goal: The purpose of this project is to improve the water quality of Crystal Lake through the reduction of phosphorus levels, removal of carp and possible treatment for aquatic invasive species. Following completion, Crystal Lake will have a healthy ecosystem of native fish and plants and cleaner, clearer waters. Removal/reduction of each of the three target elements (phosphorus, carp and invasive aquatic plants) will improve water quality. Improved water clarity will promote plant growth and habitat for native fish. Fewer carp will allow for more space and resources for native fish and reduce phosphorus release and turbidity from stirred-up sediments. Removing invasive plant species will allow for native plant species to inhabit the lake. Together these efforts will restore Crystal Lake to a natural, native, self-supporting ecosystem.

Objective 1: Reduce Phosphorus Levels in Crystal Lake

Task A: Dosing and Effectiveness Monitoring. Initial sediment cores will be taken from the lake in approximately February 2020 and evaluated for redox-P by Professor Bill James at the Center for Limnological Research and Rehabilitation at UW-Stout. The results will allow the calculation of a maximum initial dosage for alum. DO profiles previously taken on Crystal Lake will be used to establish the treatment area. Additional cores and DO profiles will be taken following the initial alum dose and results used to make any necessary adjustments to application rates

and areas. A final set of cores taken following the second application will be evaluated to verify that the desired reductions have been achieved.

Responsible Party: Shingle Creek Watershed Management Commission, Wenck, Bill James (UW-Stout)

Task B: Alum Application. The first dose of aluminum sulfate treatment will be applied in Spring 2021. The second dose will likely be applied in Spring 2022. The City of Robbinsdale will act as contracting agent for this publicly bid project.

Responsible Party: City of Robbinsdale, Wenck, alum treatment contractor (TBD)

Task C: Water Quality Monitoring. The Shingle Creek Watershed Management Commission's engineer, Wenck, will perform followup water quality monitoring in 2021 and 2022 to document changes in water quality and clarity. The lake will be monitored for surface and bottom TP, soluble reactive phosphorus (SRP), chlorophyll-a (chl-a), Secchi depth, and DO and temperature profiles, bimonthly from late May to late September. This data will be compared to historical monitoring data to help evaluate project effectiveness. Prior to undertaking monitoring, the Shingle Creek Watershed Management Commission will work with the MPCA to prepare a Quality Assurance Project Plan (QAPP), establishing monitoring procedures. A Crystal Lake monitoring station is already established in EQuIS, and collected data will continue to be uploaded as required.

Responsible Party: Shingle Creek Watershed Management Commission, Wenck

Objective 1 Timeline: February 2020 to September 2022

Objective 1 Cost: Grant: ~~\$161,984~~ \$121,604, Match: \$100,200, Total: ~~\$262,184~~ \$221,804

Objective 1 Deliverables: Technical memo setting forth dosing calculations and documenting treatment applied; monitoring data.

Objective 2: Carp Removal

Task A: Carp Population Assessment and Tracking. The previously-conducted carp assessment will be updated by Wenck using electrofishing techniques. During this assessment, 10-15 carp will be tagged with radio transmitter markers. The tagged carp will periodically be tracked using portable trackers to identify overwintering locations. Following removals, a followup carp assessment will be completed to verify that the density goal has been achieved. This task includes coordination and permitting with the Minnesota Department of Natural Resources (DNR).

Responsible Party: City of Robbinsdale, Wenck

Task B: Commercial Fish Removal. The Shingle Creek Watershed Management Commission will contract with the commercial fishermen assigned to this area to remove and sell or dispose of carp. The primary carp removal effort will be in late winter 2021, just prior to the first alum dose. Additional removals may occur in later, smaller efforts depending on the results of the follow-up population assessment.

Responsible Party: City of Robbinsdale, Wenck, commercial fishermen contractor (TBD)

Objective 2 Timeline: June 2020 to September 2022

Objective 2 Cost: Grant: ~~\$24,214~~ \$64,594, Match: \$28,000, Total: ~~\$52,214~~ \$92,594

Objective 2 Deliverables: Technical memo reporting the results of the before and after population assessment, and records of biomass removed from the lake.

Objective 3: Invasive Species Management

Task A: Field Surveys and Permit Application: The Shingle Creek Watershed Management Commission's engineer, Wenck, will perform submersed aquatic vegetation (SAV) surveys in May and September 2020, 2021, and 2022. If invasive species management is required, the engineer will obtain necessary permits from and prepare required reports to the DNR.

Responsible Party: City of Robbinsdale, Wenck

Task B: Herbicide Spot Treatments: Spot treatments for invasive plant species will be conducted as necessary in 2020, 2021, and 2022.

Responsible Party: City of Robbinsdale, Wenck, aquatic herbicide contractor (TBD)

Objective 3 Timeline: January 2020 to September 2022.

Objective 3 Cost: Grant: \$19,740, Match: \$26,240, Total: \$45,980

Objective 3 Deliverables: Plant surveys, treatment records

Objective 4: Administration/Semiannual and Final Reports

Task A: Administration/Semiannual and Final Reports.

Semiannual reports will be completed and submitted to MPCA by February 1st and August 1st each year during the Grant term. A final report will be submitted to MPCA within 30 days from the end of the Grant. Best Management Practices will be reported each year they are implemented by February 1st to the Statewide eLINK data system. Invoices will be submitted to MPCA at least quarterly. Methods and findings will be compiled into a final technical report that will be submitted as part of the Final Report for this grant.

Responsible Party: Wenck

Objective 4 Timeline: February 2020 to September 2022

Objective 4 Cost: Grant: \$10,128, Match: \$0, Total: \$10,128

Objective 4 Deliverables: Semi-annual and final reports, invoices

4. Measurable outcomes

Lake ID or stream AUID	Crystal Lake (27-0034-00)					
Phosphorus	Alum treatment	lbs/yr	255	\$/lb	\$975	100%
Other (list): <u>Carp</u>	Carp removal	kg	4000	\$/kg	\$13.05	N/A%

The 255 pound annual TP load reduction is 100% of the 255 pound annual internal load reduction required by the Crystal Lake Nutrient TMDL. There is no specific TMDL reduction goal for rough fish management, although it is a recommended action in the Implementation Plan.

The effectiveness of these measures is assessed through analysis of post-application sediment cores, water quality testing, and surveys. Phosphorus is monitored through water quality data and can also be tracked through analysis of core samples. The change in fish populations is tracked and monitored through surveys before and after commercial removal. Similarly, aquatic plants are surveyed before and after spot treatment to track the progress in eliminating the invasive species. Specifically, the Commission will take pre-application, mid-application, and post-application lake sediment cores and have them analyzed for redox-P release to verify that the target release rate has been achieved. In addition, lake surface and bottom water quality will be monitored bimonthly for two years to assess progress in improving nutrient concentrations, reducing algal growth as measured by chl-a, and improving water clarity as measured by Secchi depth.

6. Project budget (attached)

**SCOPE OF WORK
COMMON CARP MANAGEMENT METHODS
IN CRYSTAL LAKE: 2022**

For the Shingle Creek Watershed District



February 9, 2022

Prepared by:

Jordan Wein, Environmental Scientist

WSB, 178 East 9th Street, Suite 200, St. Paul, MN 55101



INTRODUCTION

Common carp (referred to as carp for the remainder of this proposal) are well-known to be a significant driver of poor water quality parameters. While foraging, they root around in lake sediments where nutrients like phosphorous can be locked up in an inactive form. When disturbance occurs from an overabundance of carp, large amounts of phosphorous are reintroduced to the water column where they become available for algae. This in turn promotes green algae blooms, turbid water conditions, as well as a lack in rooted aquatic vegetation. The main parameters that are measured to decide if a water body belongs on the Minnesota Pollution Control Impaired Waters List are total phosphorous (TP), chlorophyll-a (algae abundance), and clarity (measured by secchi depth). Carp can contribute significantly to the internal loading of TP and management of their populations below a threshold of 100kg/ha (Bajer et al, 2009) is generally considered to be an inexpensive method of managing internal loading (Bartodziej et al, 2017).

In 2020, surveys completed by Wenck for Shingle Creek Watershed District identified carp in Crystal Lake above the 100 kg/ha threshold that indicates a need for management. Carp were found in numbers that warranted testing of removal methods in order to guide future long-term management.

In 2021, WSB tested two removal techniques including baited box nets and pop netting. These methods were used simultaneously to take advantage of the carp aggregation that has formed following baiting with corn. These results have led to the watershed district to plan for this removal project and costs associated with that effort. WSB's proposal is detailed below.

Baited Box and Float Netting: Methods

Corn is a very selective bait and does not attract native fish like bass, northern pike or bluegill. Therefore, drawing in carp to a small area can be advantageous to removal efforts. Baited box netting can be effective at capturing carp that are within the box net area by quickly raising the sides of the net around foraging carp. Box netting is not susceptible to debris on the bottom of the lake or steep drop-offs that can make it difficult to keep a continuous wall of netting without allowing the carp to escape out the bottom. Walls on the outside of the net are hand raised quickly by pulling several ropes from shore that are



attached to posts. This occurs during nighttime hours since carp foraging is highest at night. Once trapped, the carp can then be rolled toward one side of the net and easily lifted into a boat for transfer out of the lake. The typical dimensions are 60' X 30' X 10', which is the style used in 2021. We recommend multiple efforts simultaneously (at least 2) used in the area of the aggregation to catch as many as possible in the area while they are relatively naïve to the bait.

We will also use a net trap designed to have the perimeter of the submerged net float to the surface which traps foraging carp inside the net area. The dimensions are no less than 100' X 40'. This style was also effective in 2021.

We are aware of U.S. Patent No. 10,959,413 ("the '413 patent"). WSB takes IP very seriously and

asked counsel to review the patent claims. From the review we have been advised that the box net system utilized by WSB does not infringe any claim of the '413 patent. Every claim of the '413 patent requires a weight. Specifically, every claim requires a weight that is secured to a cord and a release mechanism for holding the weight at the top of a stem/post. A box net system that does not include a weight cannot infringe any claim of the '413 patent. The box net system utilized by WSB does not include a weight.

One important addition to the plan for 2022 is to actively monitor the activity of PIT tagged carp at the bait station, assuming Stantec staff are able to successfully implant fish in late spring/early summer 2022 preceding removal events. PIT tag data will be delivered via cellular connections and emailed to WSB for analysis or downloaded by Stantec staff during bait checks via Bluetooth enabled device on site (i.e. cell phone or Bluetooth capable laptop on shore) every one to two days. This data will be used to analyze carp behavioral patterns and determine the time of the day when carp are aggregated at the bait station. The data will be used to plan removal operations during peak carp activity and maximize the chance of successful catch.

All carp will be counted, checked for PIT tags and a subsample will be measured and weighed in order to estimate total weight and individuals removed. The 2021 report concluded between 3,000-4,000

individuals needed to be removed to approach the management threshold of 100kg/ha depending on growth rates.

Disposal of Carp

WSB would handle the logistics of transporting carp for disposal from the lake.

DATA ANALYSIS AND REPORTING

Following field efforts in 2022, all collected data will be compiled into a report. Deliverables include a description of each removal event, including number of fish captured in each net, an updated population and biomass density estimate based on mark/recapture calculations or extrapolation from 2021 removal data, CPUE for removal methods of box netting and other methods attempted, and total population and pounds removed. WSB will provide Stantec with raw data downloaded from PIT array used to time removal events.

INVOLVEMENT OF STANTEC STAFF/VOLUNTEERS

WSB requests the help of Stantec staff and/or volunteers to save on budget and to further ensure success during removal efforts. We estimate this time to include 4-5 weeks of daily baiting the area with corn (~1 hour per day), 4-6 hours assistance with installation, and 4-8 hours of assistance with removal events (estimated 3 events totaling 12-24 hours). Ideally, removal events would include up to 2 Stantec staff. The Stantec staff would also be trained on method of downloading PIT data from mobile floating unit. The staff member would not be asked to touch the technical equipment or to make adjustments to the equipment. They would then be asked to email the data downloaded to WSB staff as a redundancy measure in case cellular service fails and the PIT remote delivery unit fails.

SCHEDULE OF OPERATIONS:

	2022					
	May	June	July	August	September	October
Permitting and project management 2022						
Installation of box nets						
Trapping operations: At least one PIT array available during project to monitor timing of tagged fish arrivals						
Uninstall of equipment, decontamination, and patching						
Data analysis and reporting						

Crystal Lake box netting and seining 2022	Expenses	Env. Scientist	Env. Scientist	Env. Scientist	Line item total
Hourly rate		\$95	\$102	\$80	
Permitting and project management 2022		16			\$1,520
Installation of carp removal equipment		8	8	8	\$2,216
Trapping operations: At least one PIT array available during project to monitor timing of tagged fish arrivals	\$5,000	40	40	40	\$16,080
Uninstall of equipment, decontamination, and patching		6	6		\$1,182
Data analysis and reporting		10			\$950
Overall Project total					\$21,948

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**SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
MONTHLY COMMUNICATION LOG
February 2022**

Date	From	To	SC	WM	Description
2-1-2022	Nick Macklem @ New Hope	Ed Matthiesen.	X		Meadow Lake drawdown reimbursement
2-2-2022	Ann Ackerson	Todd Shoemaker.	X		New Hope Liberty Park water quality project proposal
2-4-22	Steve Christopher, BWSR	Diane Spector	X	X	Notice that the planning partnerships can proceed with the Convene process for the FY22-23 watershed-based implementation funding (WBIF)
2-14-22	MPCA	Diane S	X	X	Request to take the MPCA climate adaptation and resilience planning survey
2-16-2022	Eric Waage	Todd S.	X	X	Todd attended Hennepin County Emergency Management quarterly update
2-16-22	Laura Jester, Bassett Creek	Diane S	X	X	Surveying WMO plans to return to in-person meetings
2-18-2022	DNR	Nick Omodt	X		Upper Twin Lake Association CPL treatment for 2022